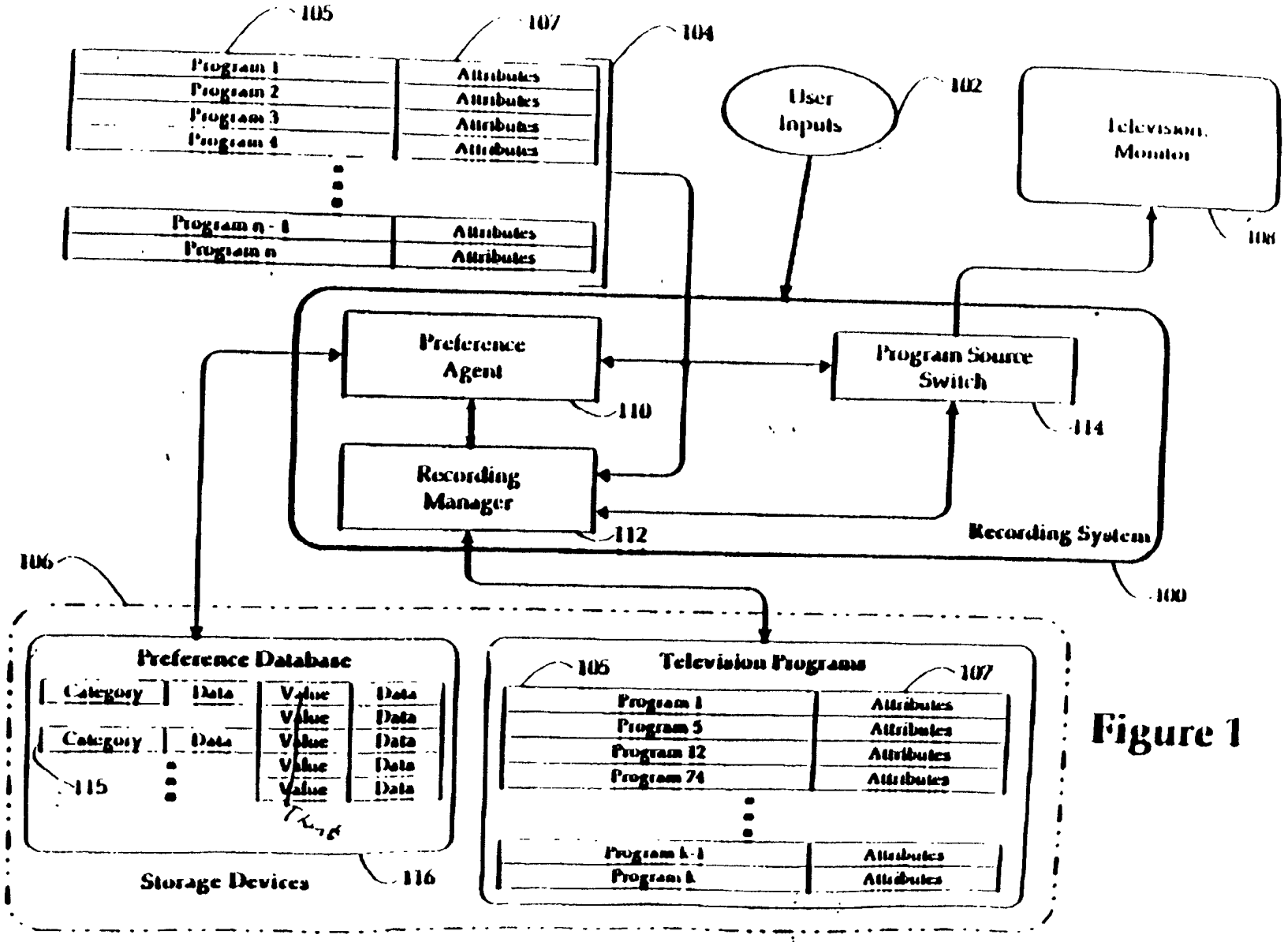


Figure 1

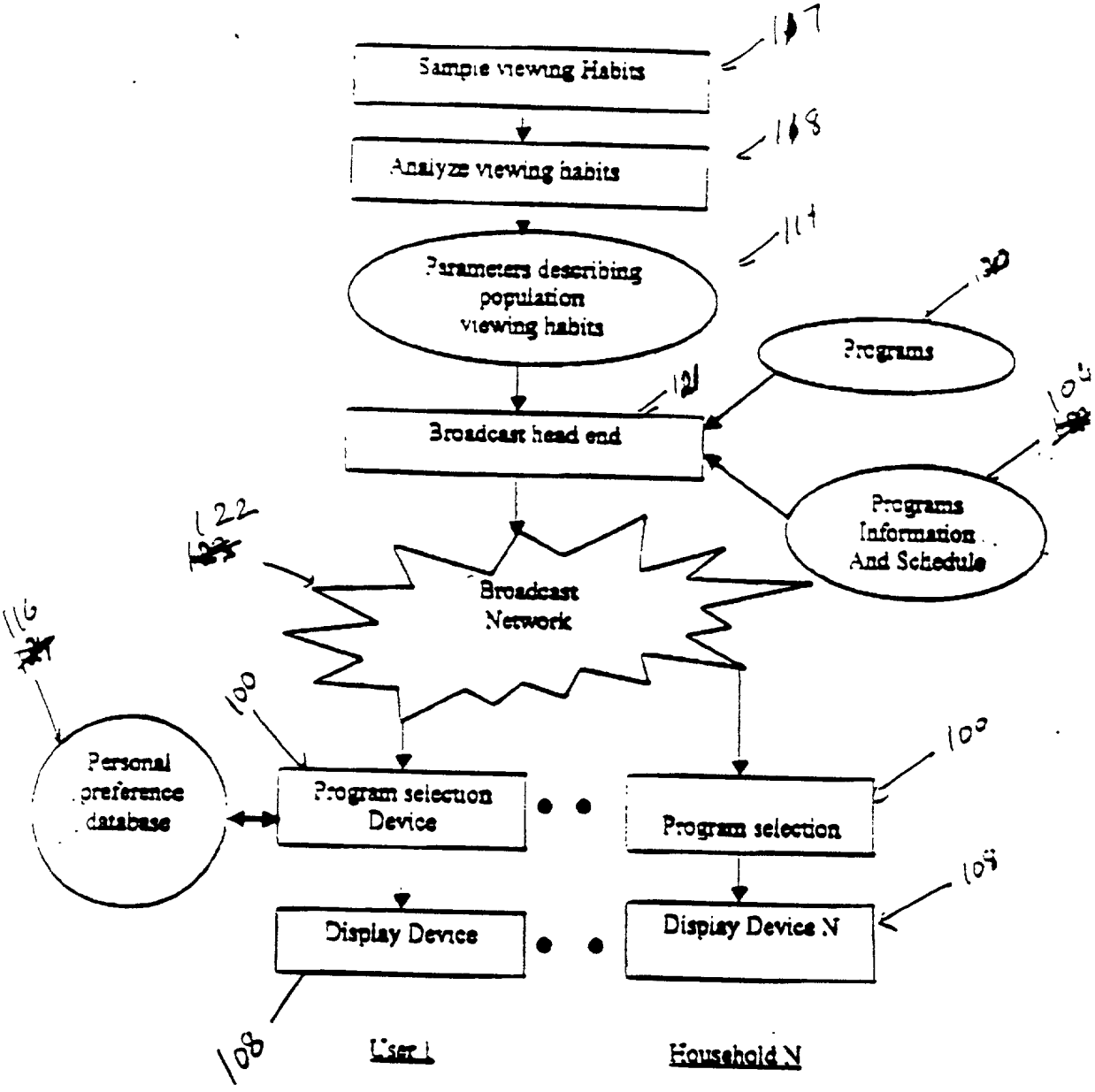

Sample viewing Habits
Analyze viewing habits
Parameters describing population viewing habits
Programs
Broadcast head end
Programs Information And Schedule
Broadcast Network
Personal preference database
Program selection Device
Program selection
Display Device
Display Device N
User 1
Household N

Figure 2

Examples of Program Information

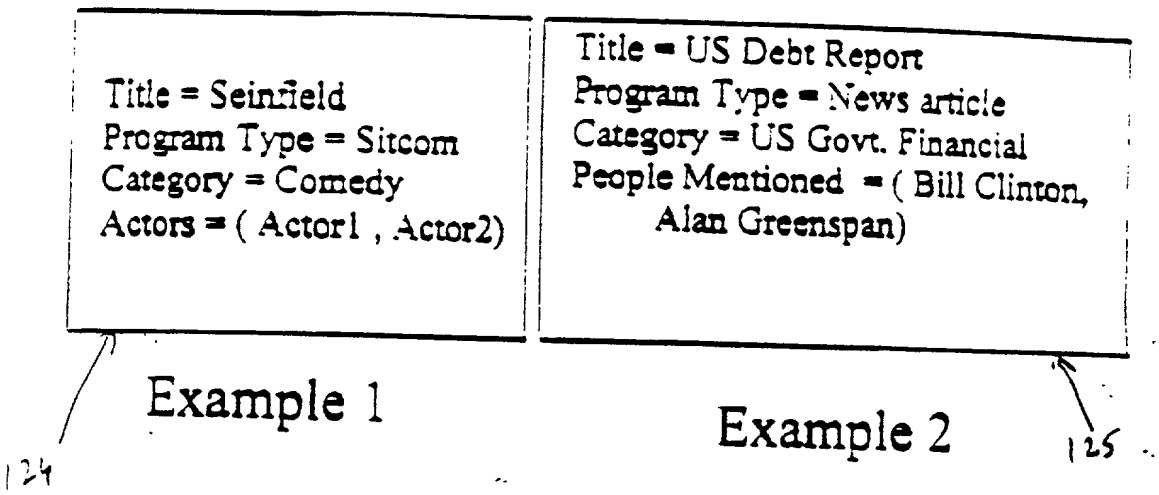


Figure 3

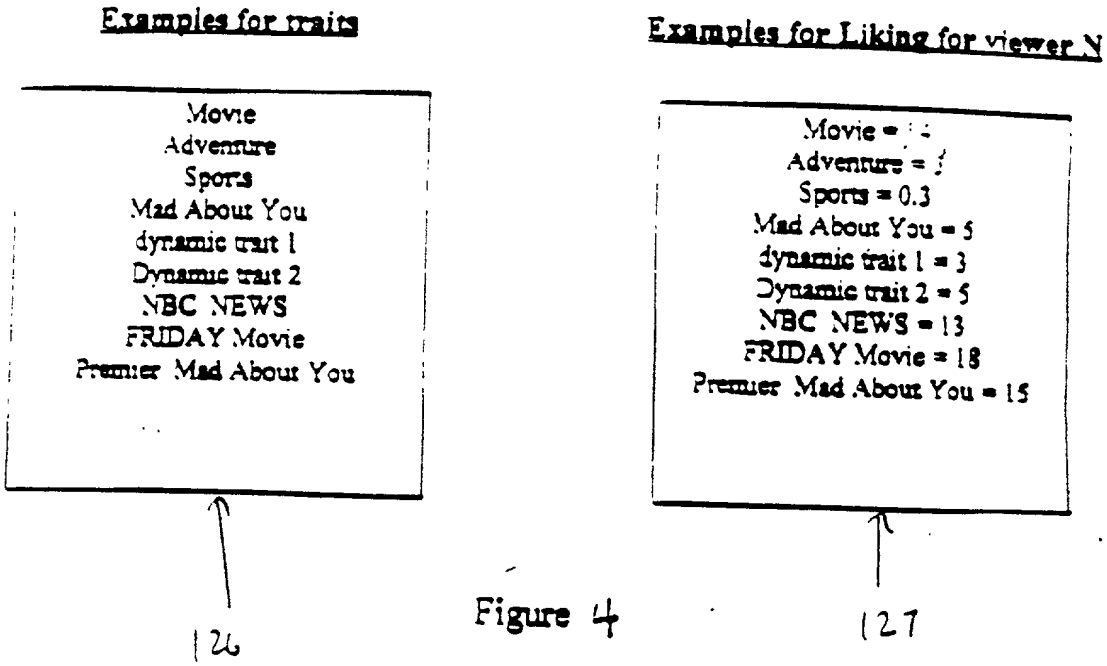

Examples for traits
Movie
Adventure
Sports
Mad About You
dynamic trait 1
Dynamic trait 2
NBC NEWS
FRIDAY Movie
Premier Mad About You
126
Examples for Liking for viewer N
Movie =
Adventure =
Sports = 0.3
Mad About You = 5
dynamic trait 1 = 3
Dynamic trait 2 = 5
NBC NEWS = 13
FRIDAY Movie = 18
Premier Mad About You = 15
127

Figure 4

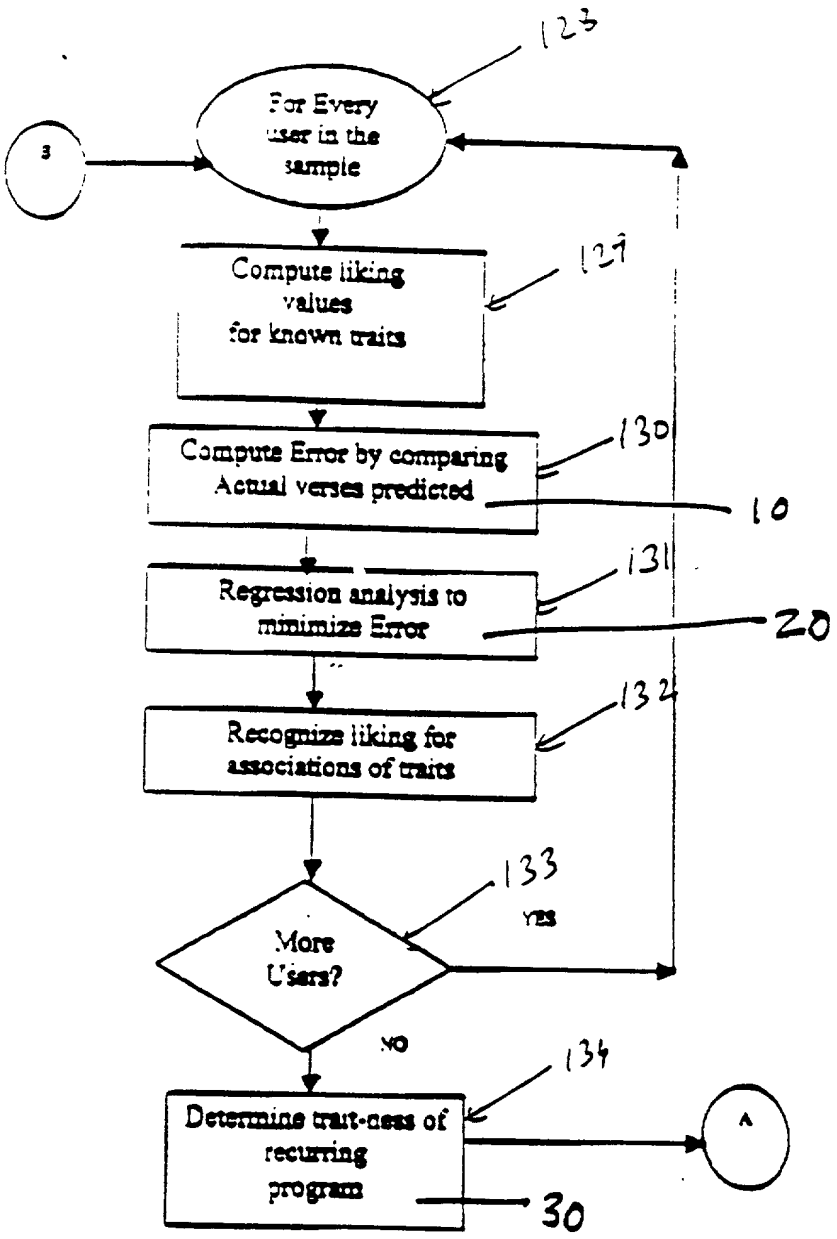

123
For Every User in the sample
3
Compute liking values for known traits
129
Compute Error by comparing Actual verses predicted
130
10
Regression analysis to minimize Error
131
20
Recognize liking for associations of traits
132
More Users?
133
yes
NO
Determine trait-ness of recurring program
134
30
A

Figure 5(a)

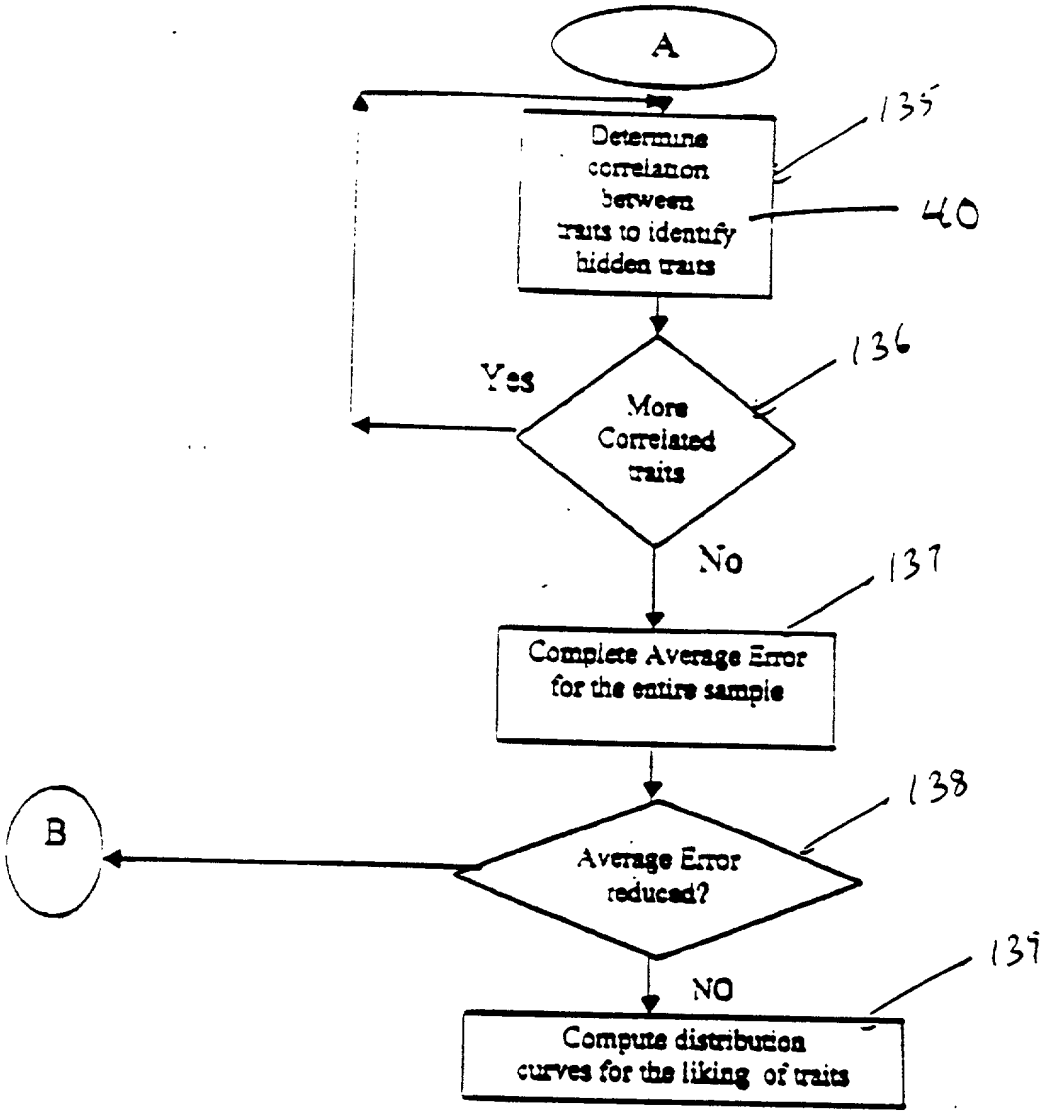

A
Determine correlation between traits to identify hidden traits
135
40
136
Yes
More Correlated traits
No
137
Complete Average Error for the entire sample
138
B
Average Error reduced?
139
NO
Compute distribution curves for the liking of traits

Figure 5 (b)

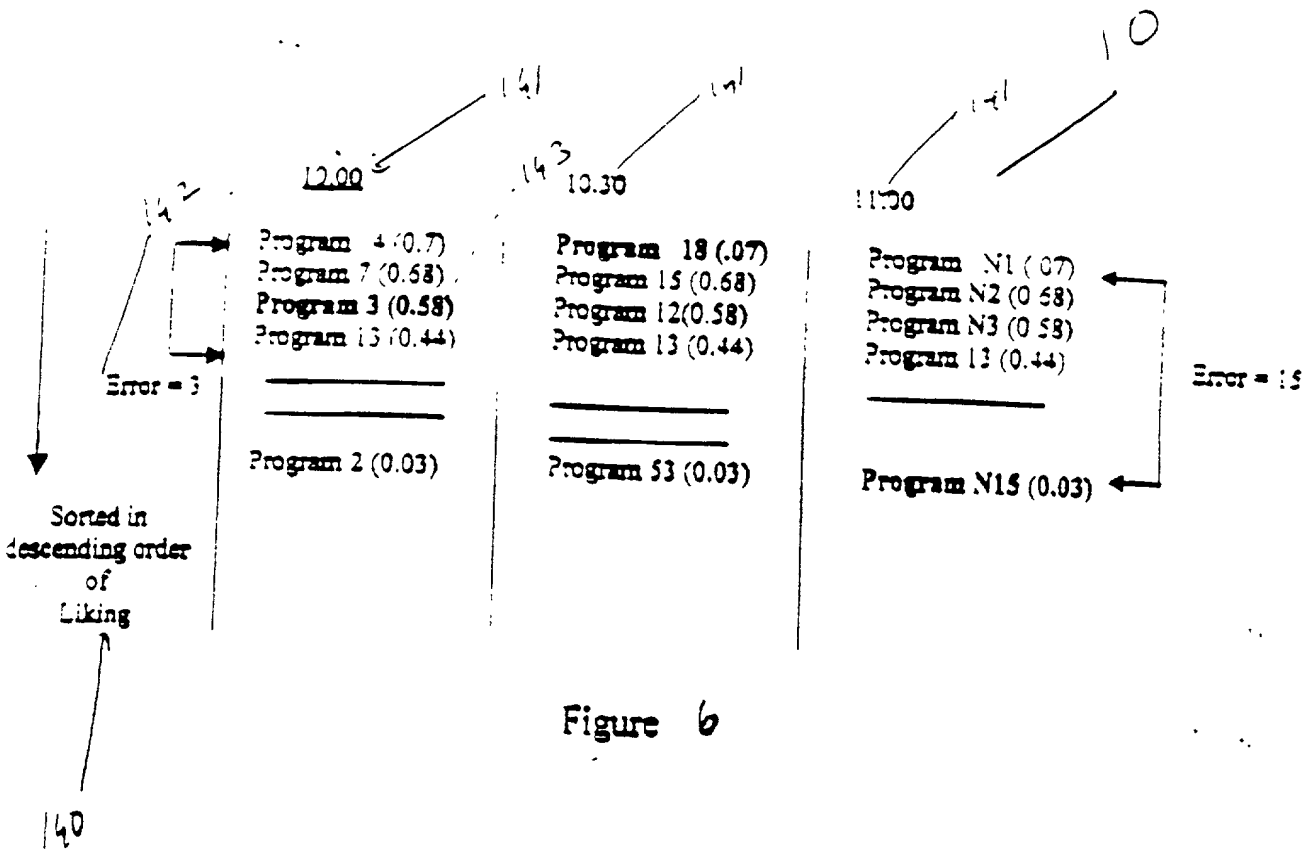

10
141
141
141
12:00
10:30
11:30
142
143
Program 4 (0.7)
Program 7 (0.68)
Program 3 (0.58)
Program 13 (0.44)
Program 2 (0.03)
Program 18 (.07)
Program 15 (0.68)
Program 12(0.58)
Program 13 (0.44)
Program 53 (0.03)
Program N1 (.07)
Program N2 (0.58)
Program N3 (0.58)
Program 13 (0.44)
Program N15 (0.03)
Error = 3
Error = 15
Sorted in descending order of Liking
140

Figure 6

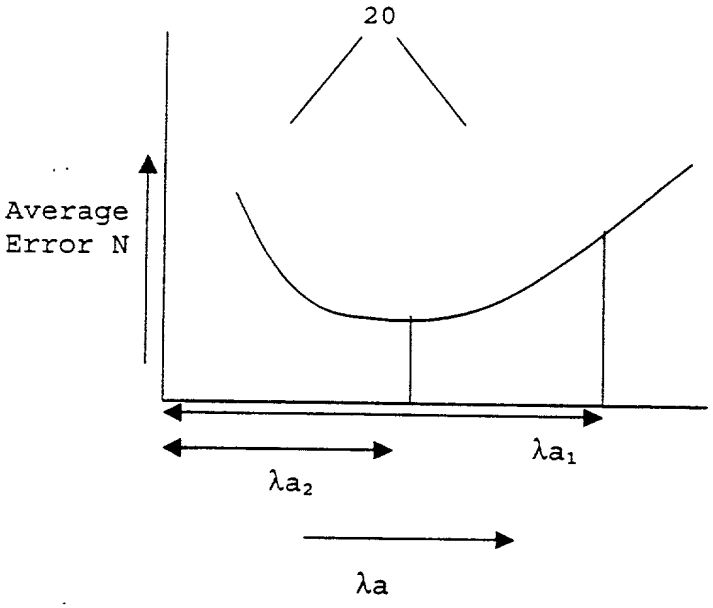
Figure 7

Current Liking Value

$\lambda a_1 = 2$
$\lambda b_1 = 5$
$\lambda c_1 = -3$
$\lambda d_1 = 0$

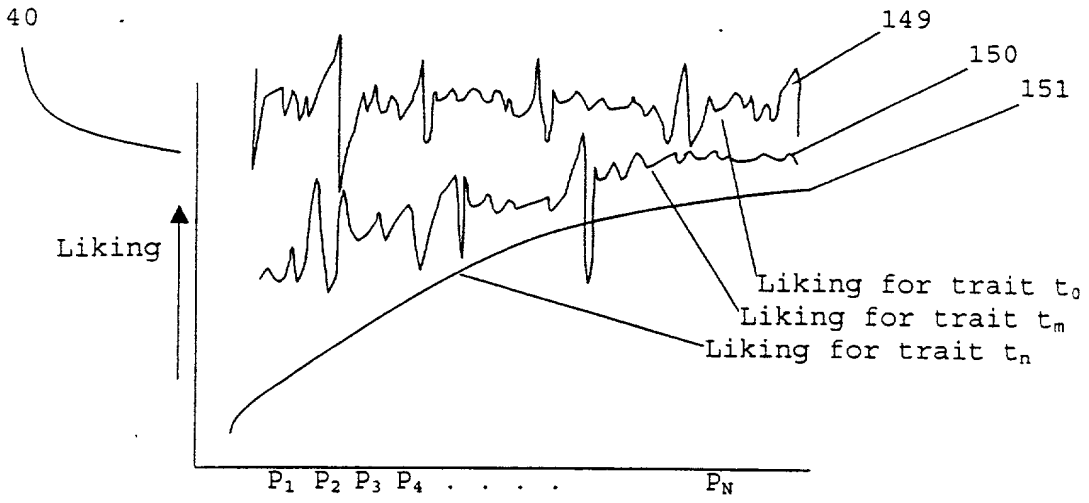
Next Liking Value

$\lambda a_2 = 1.5$
$\lambda a_1 = 5$
$\lambda a_1 = -3$
$\lambda a_1 = 0$



($\lambda b = \lambda b_1$
$\lambda c = \lambda c_1$
$\lambda d = \lambda d_1$
.
.
.)

Figure 8



t_m and t_n are correlated

t_m can be expressed as $t_m = t_x + t_m'$

and t_n can be expressed as $t_n = a_x t_x + t_n'$

Computing Traitness of a trait is a program

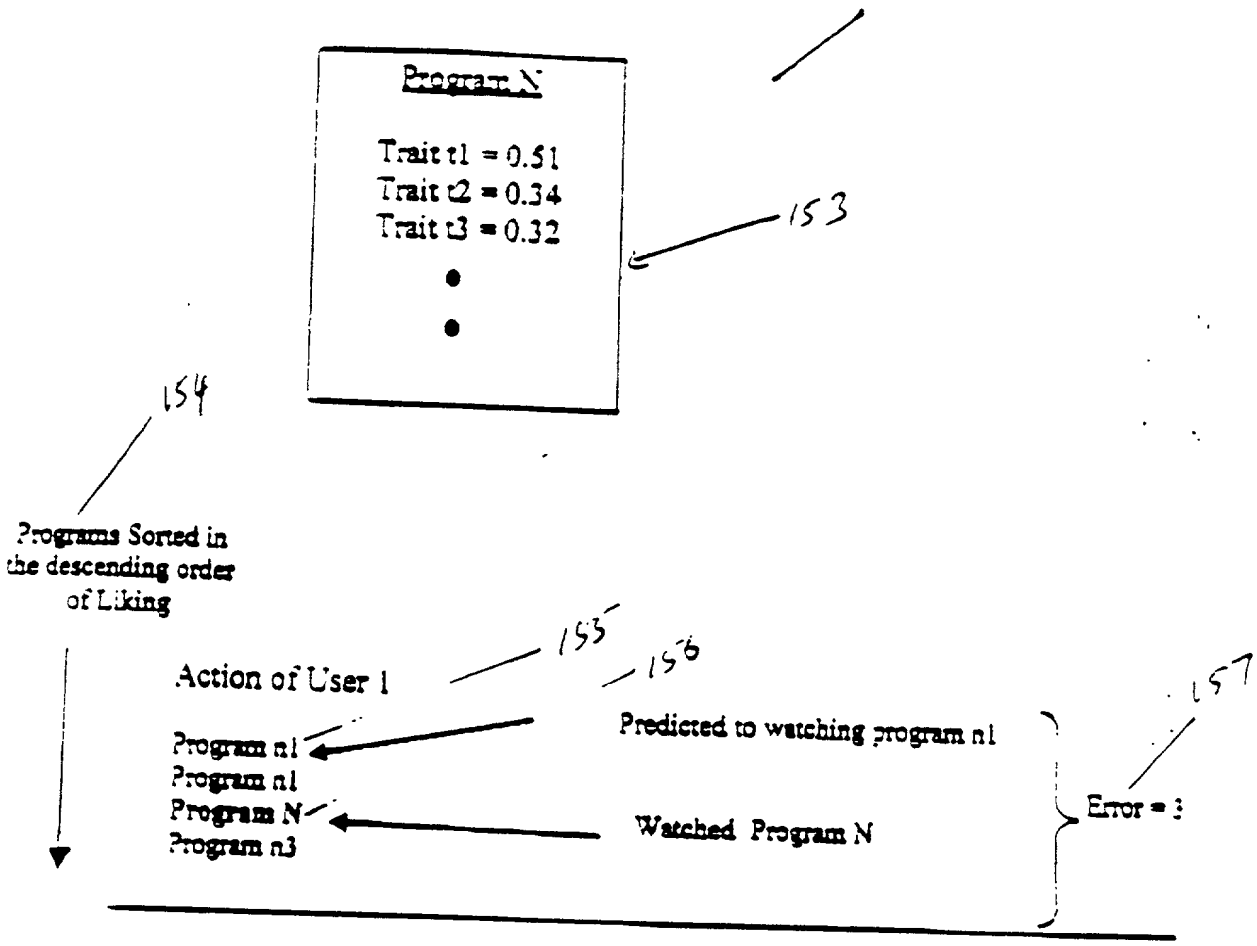


Figure 9(a)

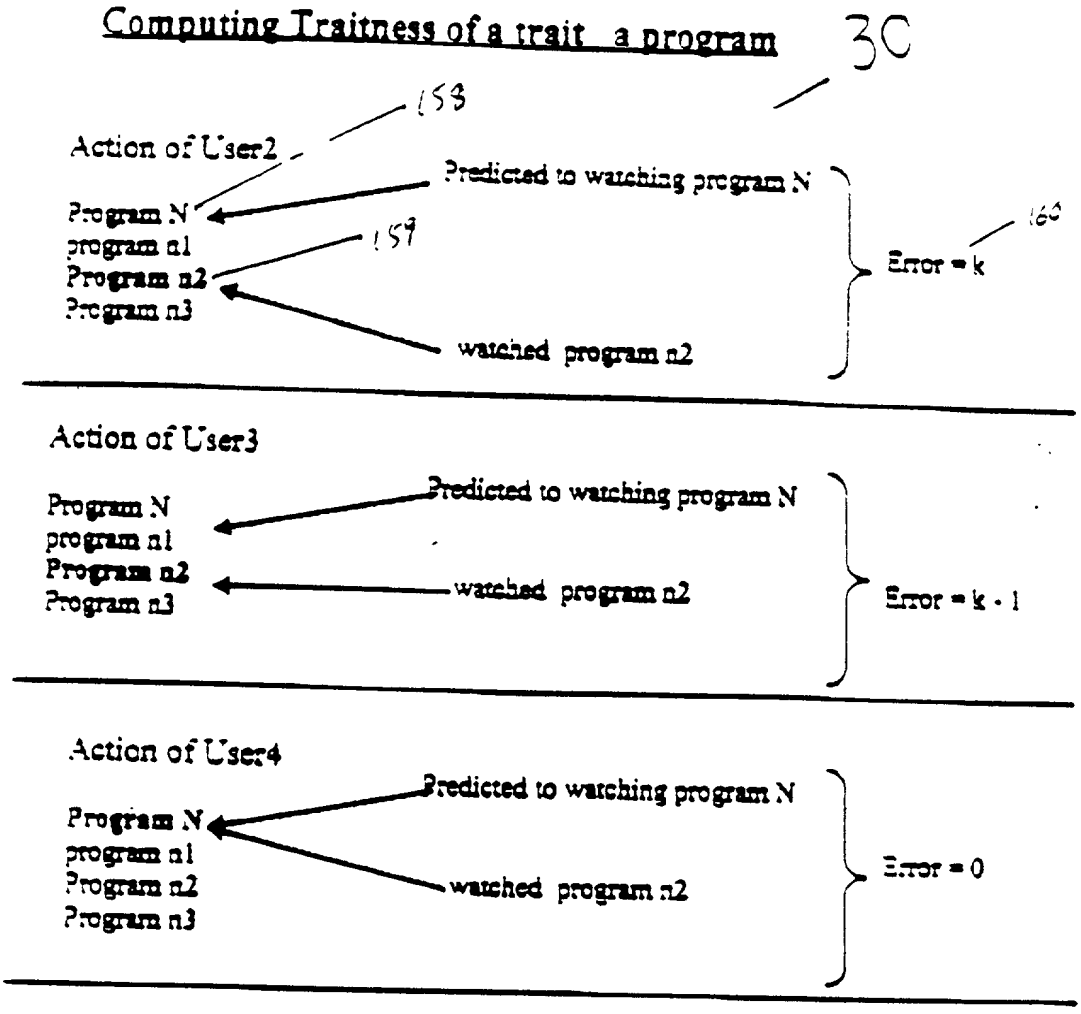
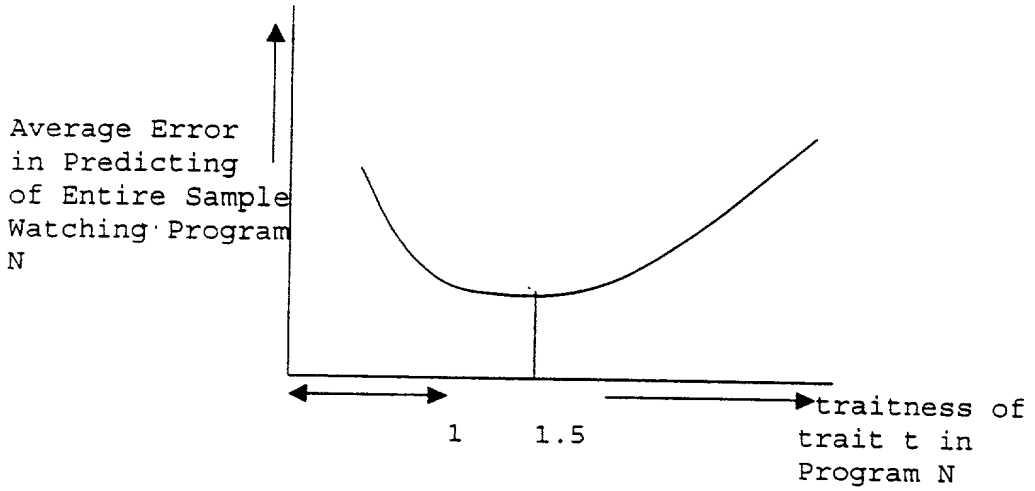

Computing Traitness of a trait a program
3C
153
Action of User2
Predicted to watching program N
Program N
program n1
Program n2
Program n3
159
watched program n2
160
Error = k
Action of User3
Predicted to watching program N
Program N
program n1
Program n2
Program n3
watched program n2
Error = k - 1
Action of User4
Predicted to watching program N
Program N
program n1
Program n2
Program n3
watched program n2
Error = 0

Figure 9(b)

Figure 9(c)



Optimal value of traitness

e.g. comedy-ness in Seinfeld = 1.5
comedy-ness in Frasier = 0.89

Example for Liking Distribution Record format

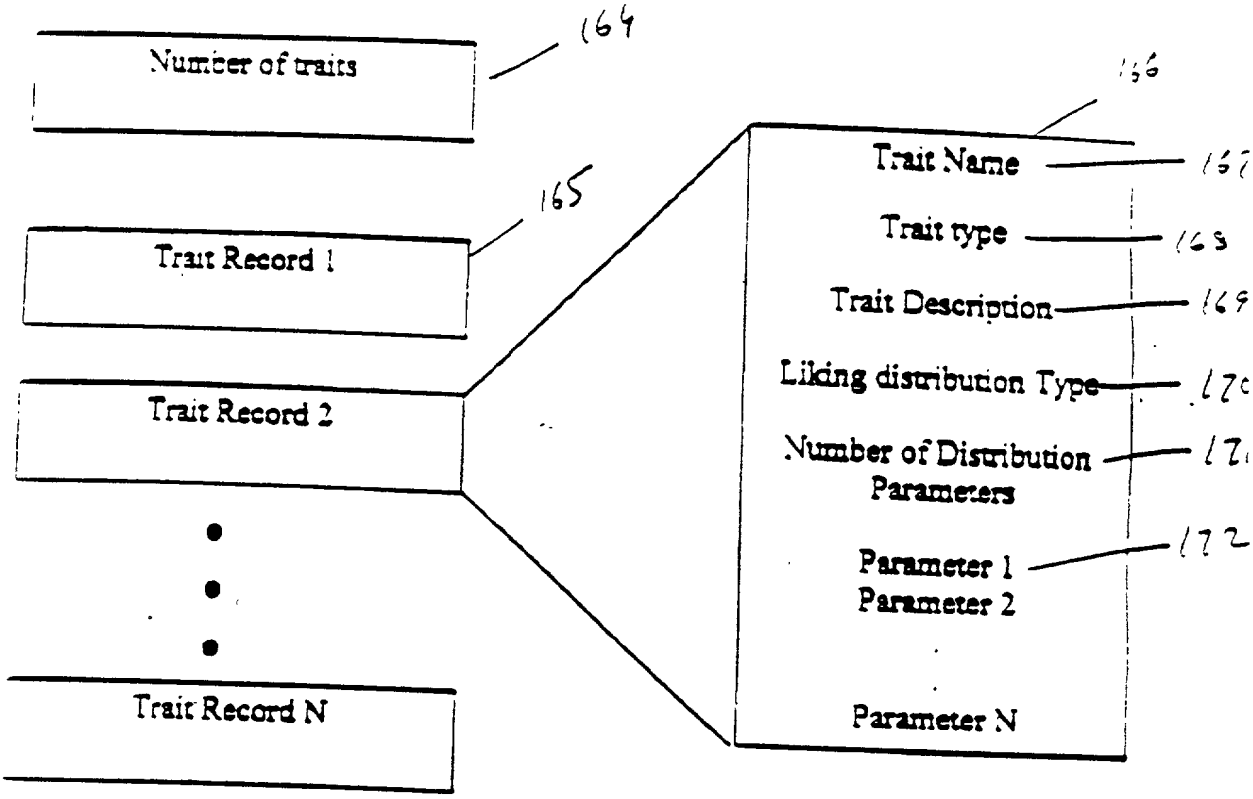


Figure 10

Some Sample Values For Fields in trait Record

Trait type	Trait Description
Static , dynamic Association Generated	(NBC , "NEWS"), SUBSTRING("CLA") IN DESC, TITLE

Distribution	Distribution Parameters
Normal Exponential Defined type 1 Defined type 2	Mean = 13, Deviation =2

Figure 11

Example for Traitness of recurring Programs

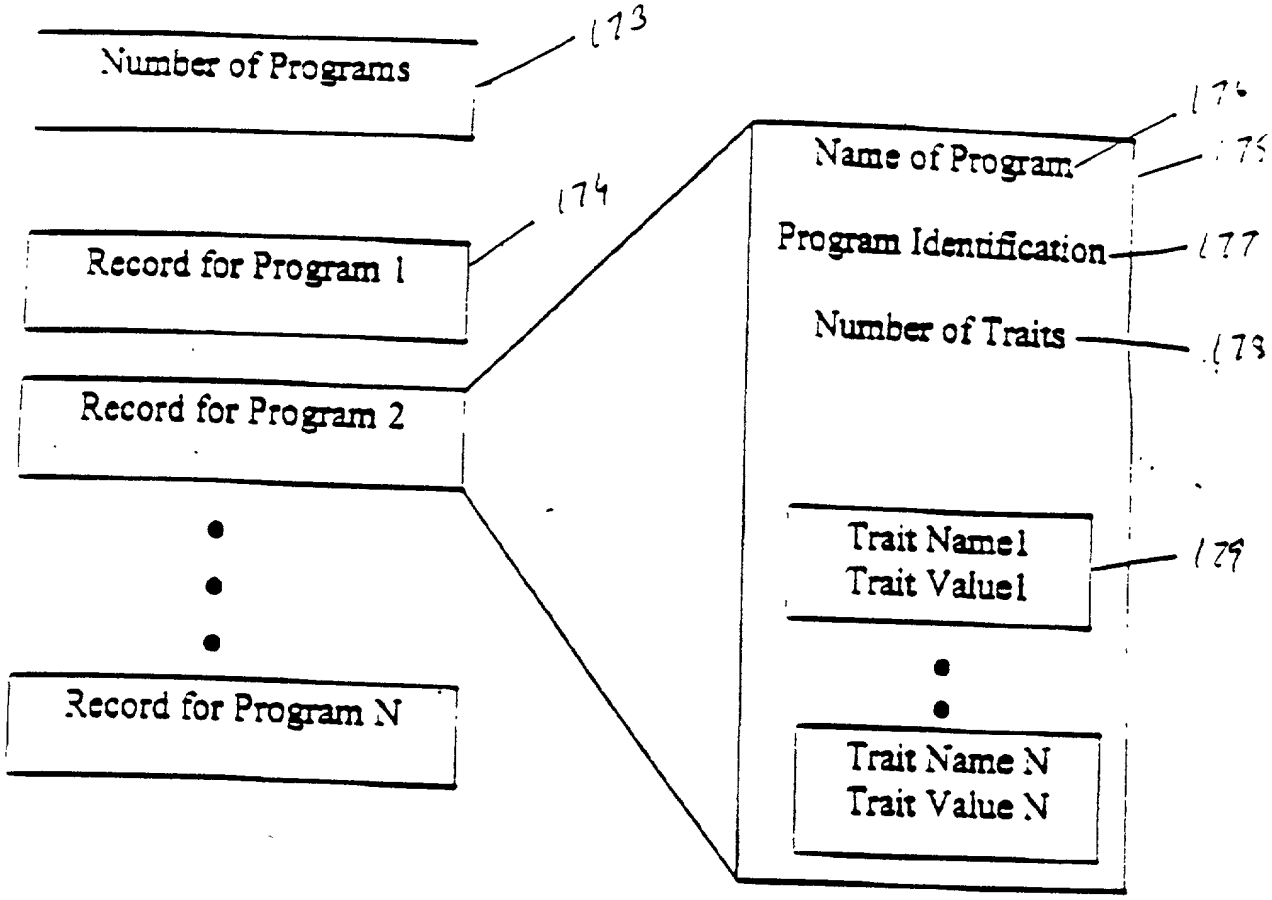


Figure 12

Example For Broadcasting traitness as a part of EPG Data

Program Info
Seinfield,
NBC ,
Comedy = 0.07
sitcom ,
Dynamic trait 1 = 0.1
•
•
Actor = Seinfield

Figure 13

Example for Selection Record

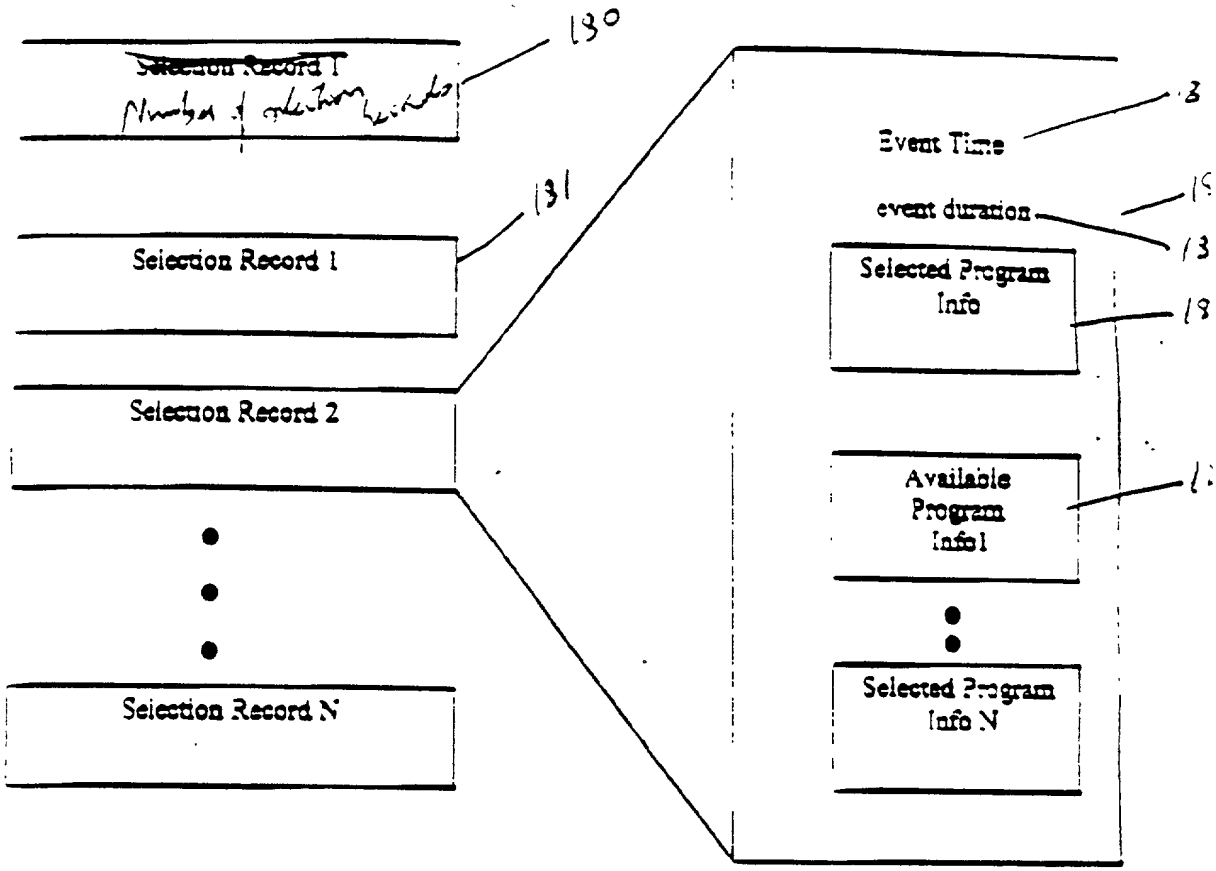


Figure 14

Generation of User Selection History

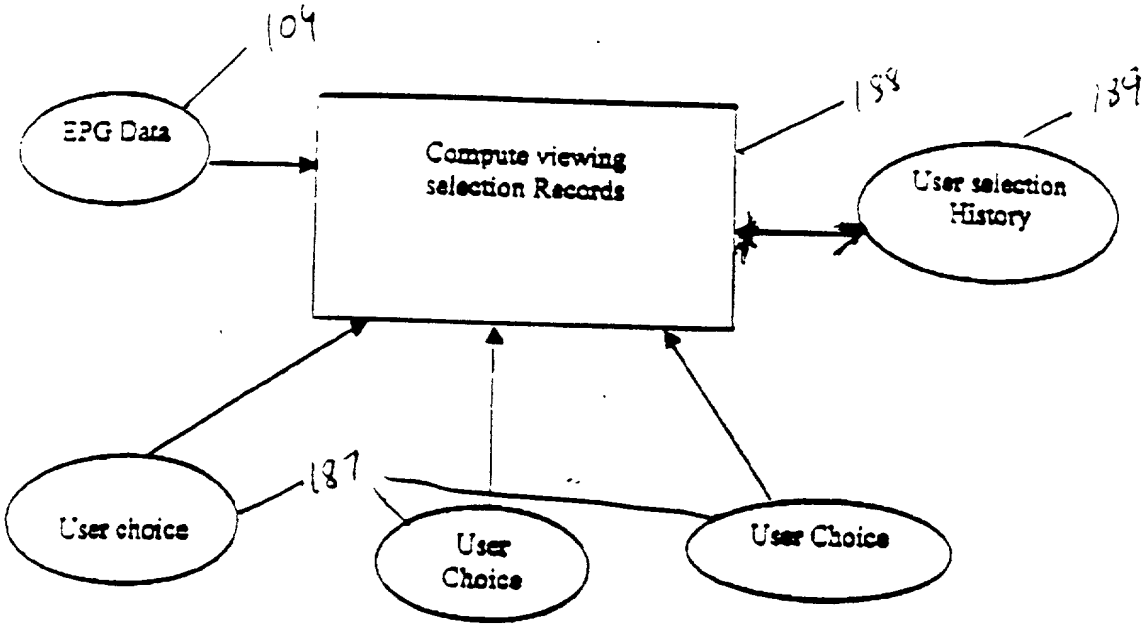


Figure 15

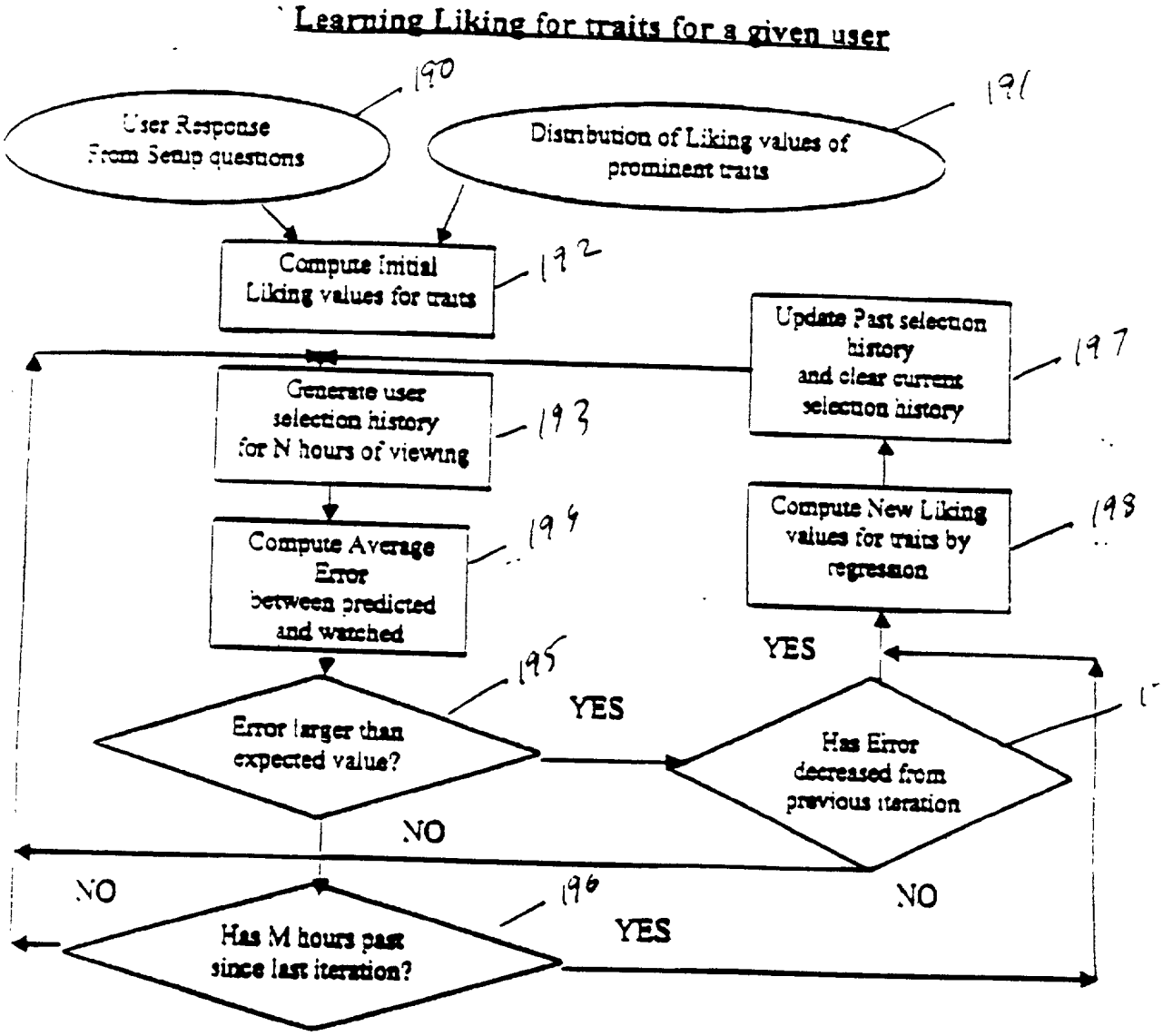

Learning Liking for traits for a given user
User Response From Setup questions
190
Distribution of Liking values of prominent traits
191
Compute Initial Liking values for traits
192
Generate user selection history for N hours of viewing
193
Compute Average Error between predicted and watched
194
Error larger than expected value?
195
YES
NO
Has M hours past since last iteration?
196
NO
YES
Has Error decreased from previous iteration
YES
NO
Compute New Liking values for traits by regression
198
Update Past selection history and clear current selection history
197

Figure 16

Computing Relevance

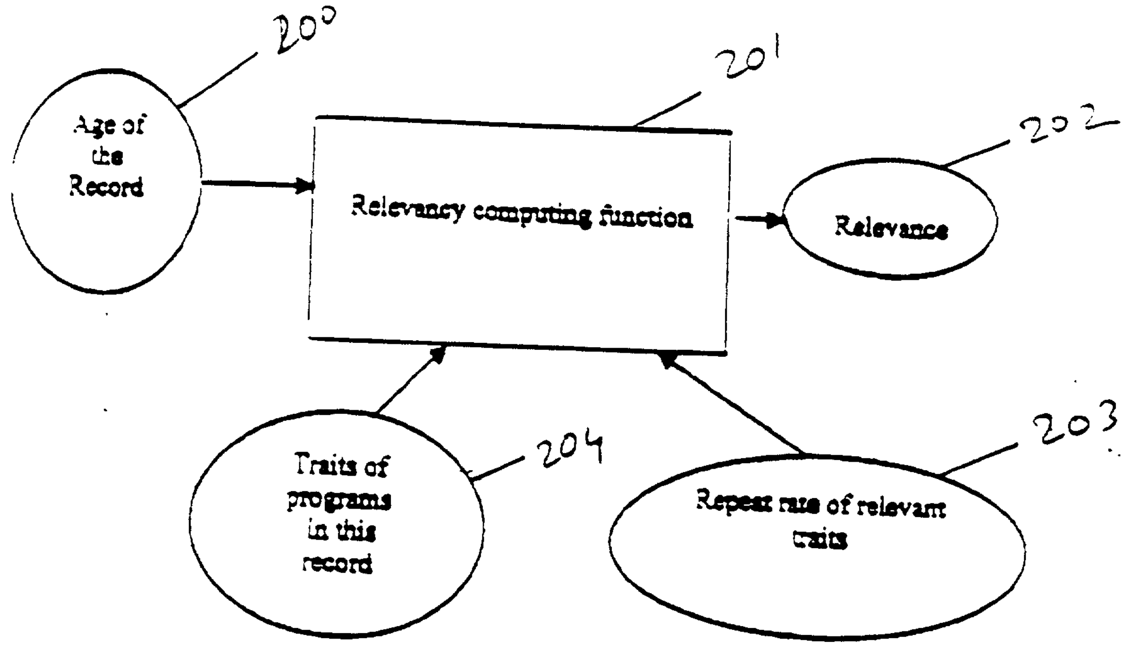


Figure 17 (a)

Figure 17(b)

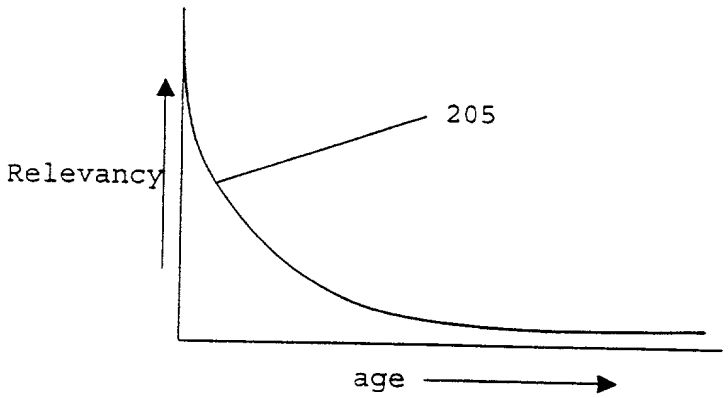
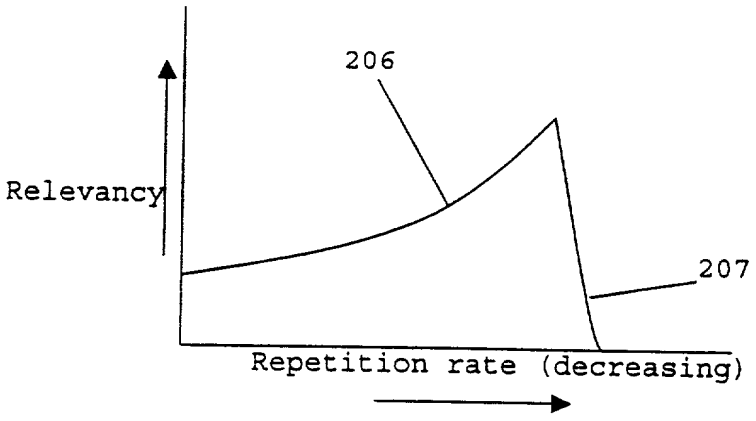


Figure 17(c)



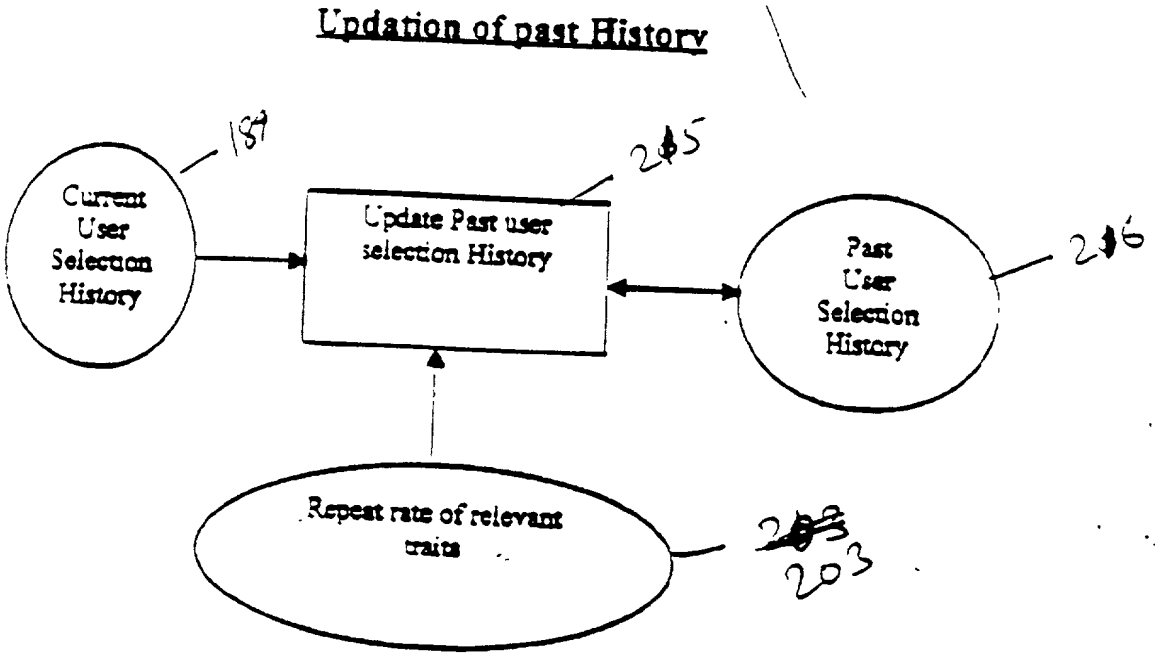

Updation of past History
Current User Selection History
Update Past user selection History
Past User Selection History
Repeat rate of relevant traits
159
205
206
203

Figure 1B(a)

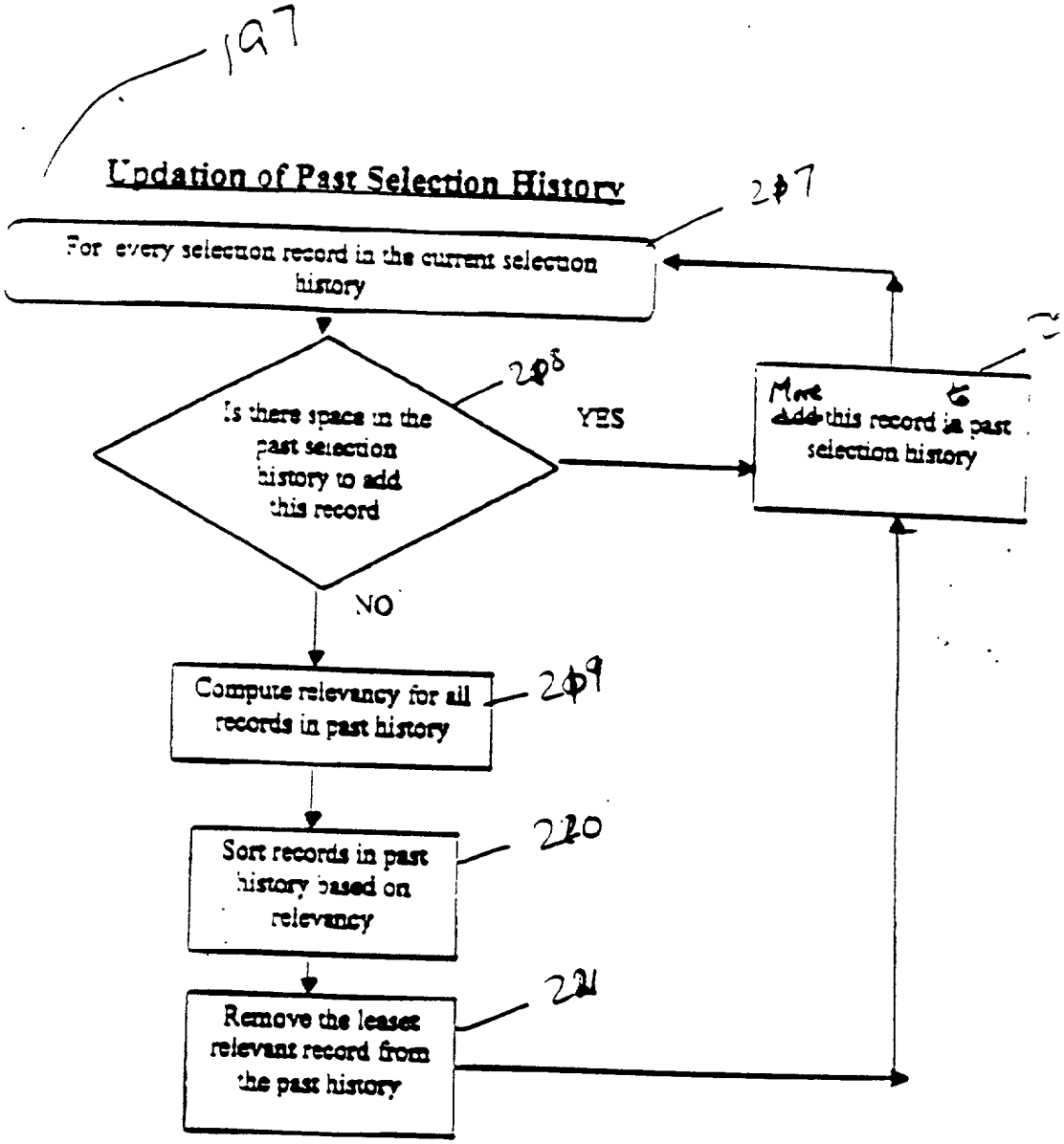

197
Updation of Past Selection History
207
For every selection record in the current selection history
208
Is there space in the past selection history to add this record
YES
Move & add this record in past selection history
NO
209
Compute relevancy for all records in past history
210
Sort records in past history based on relevancy
211
Remove the leaset relevant record from the past history

Figure 18(b)

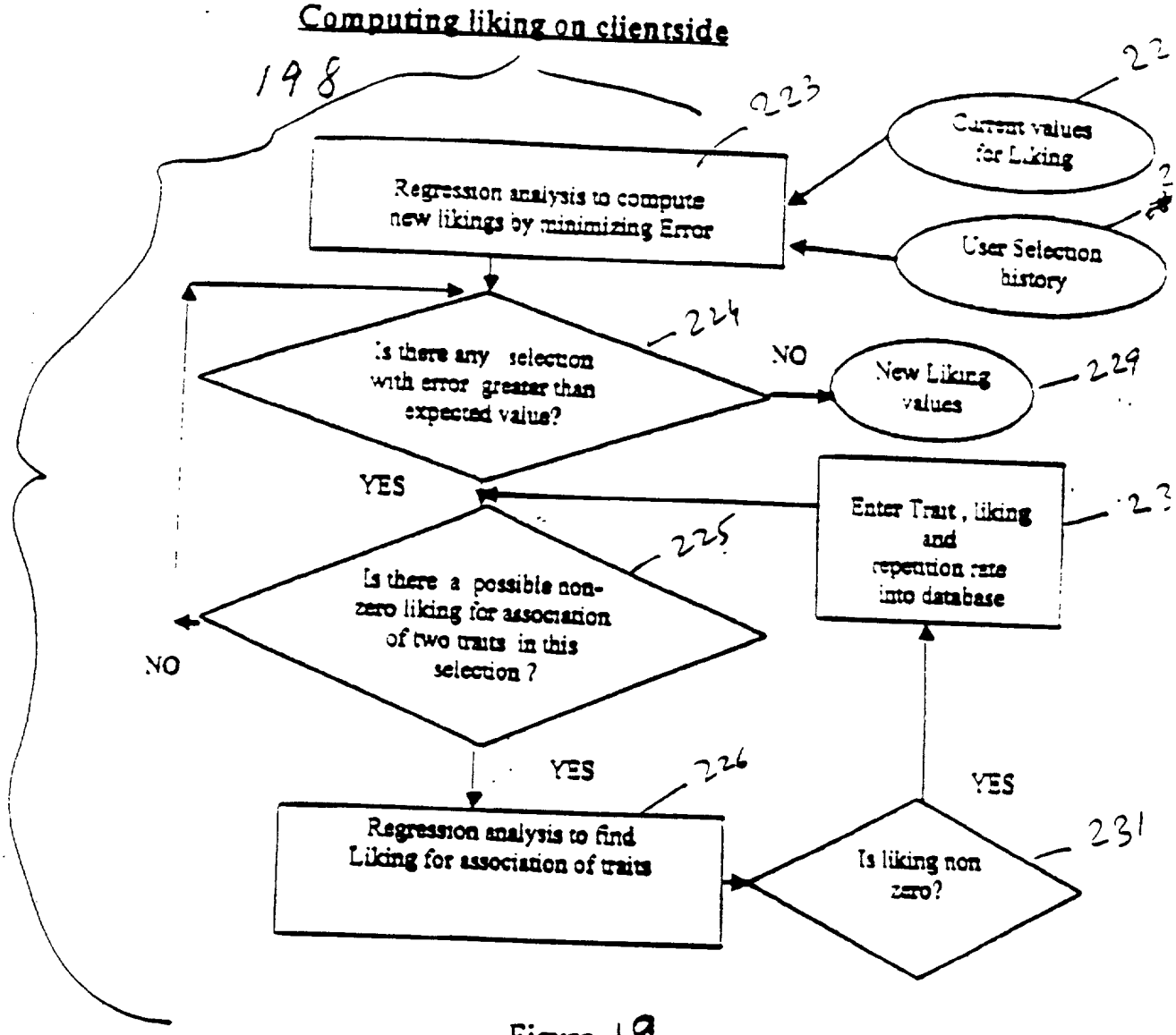

Computing liking on clientside
198
223
Regression analysis to compute new likings by minimizing Error
Current values for Liking
User Selection history
224
Is there any selection with error greater than expected value?
NO
New Liking values
229
YES
Enter Trait, liking and repetition rate into database
225
Is there a possible non-zero liking for association of two traits in this selection ?
NO
YES
226
Regression analysis to find Liking for association of traits
YES
Is liking non zero?
231

Figure 19

Computing scores for programs for future prediction

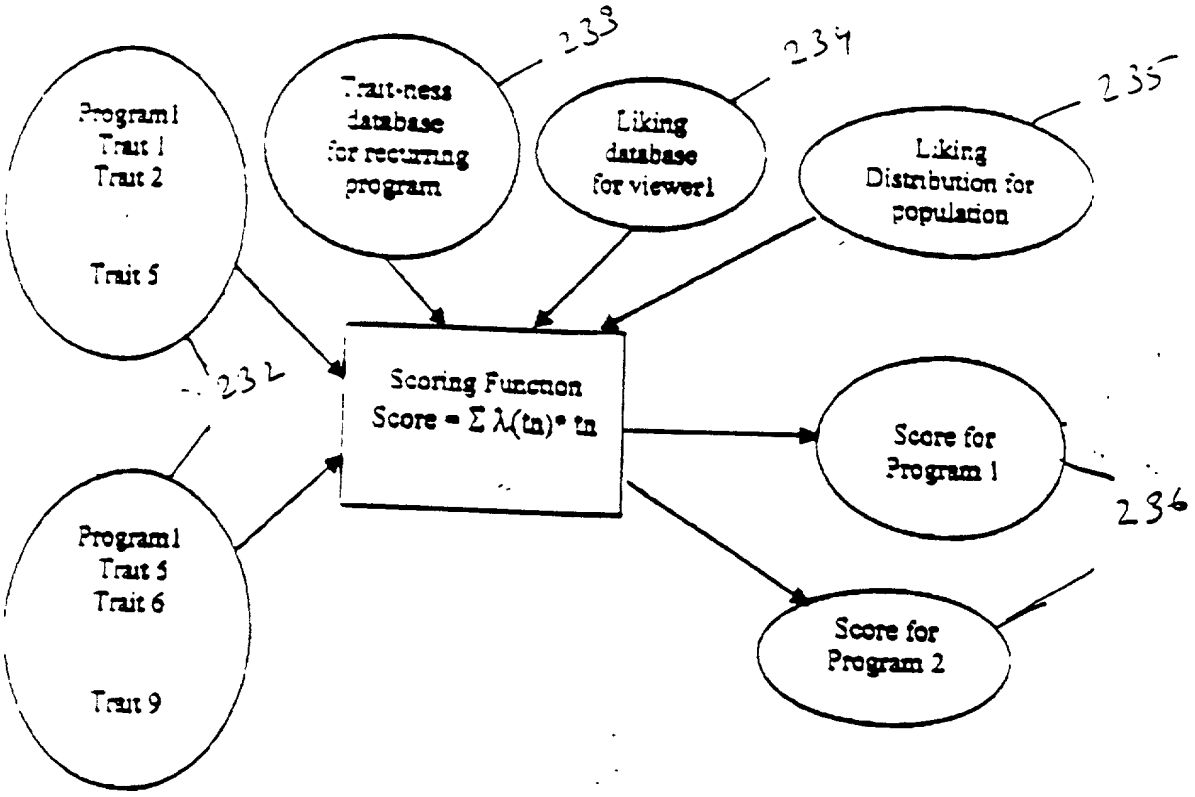
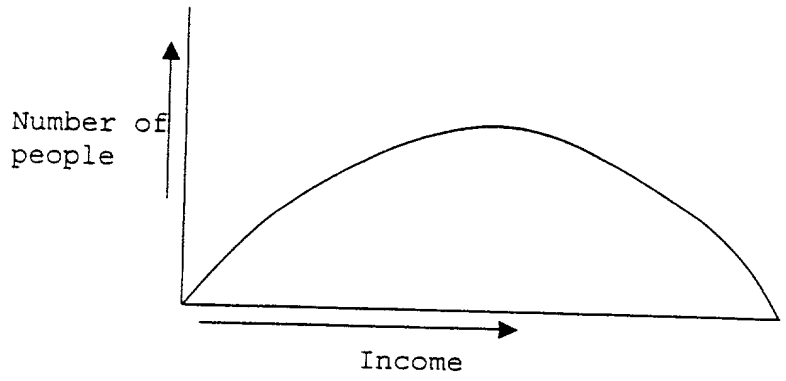
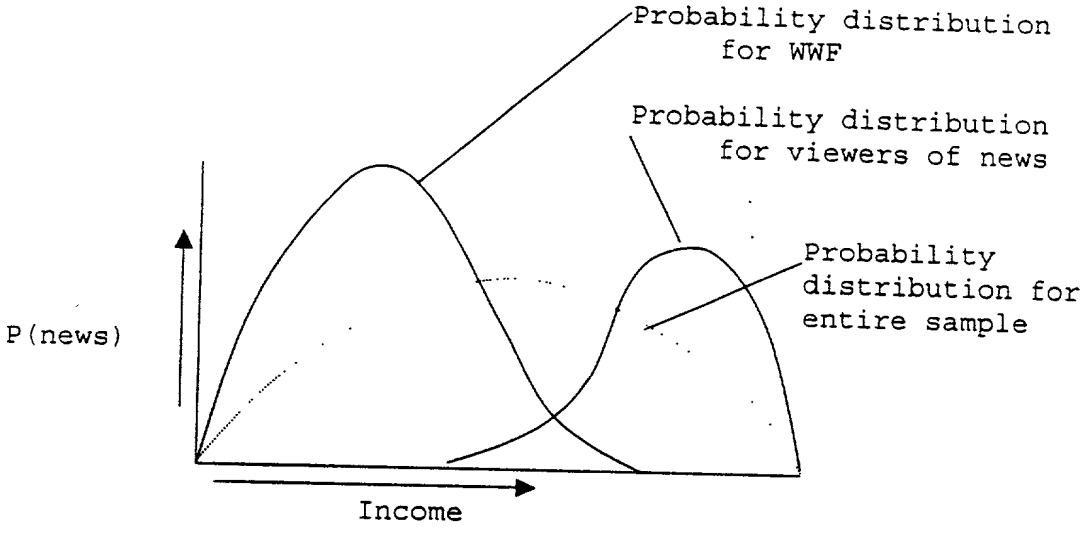


Figure 20

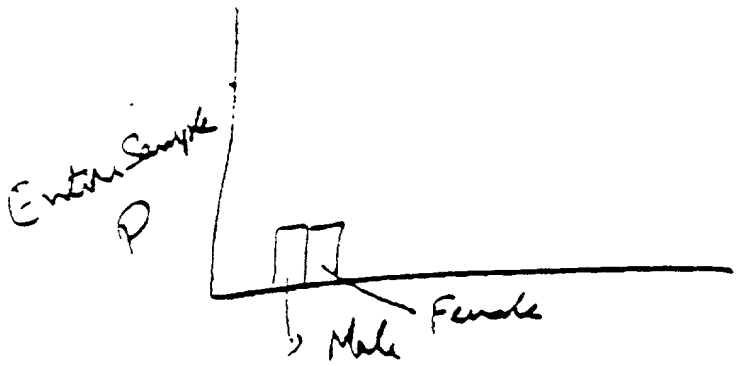
Figure 21(a)

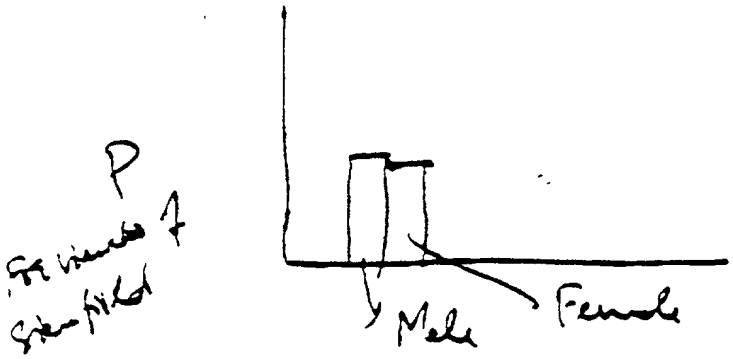


(i)



(ii)


Enter Sample
P
Male
Female


P
for viewers of
Sex-Field
Male
Female

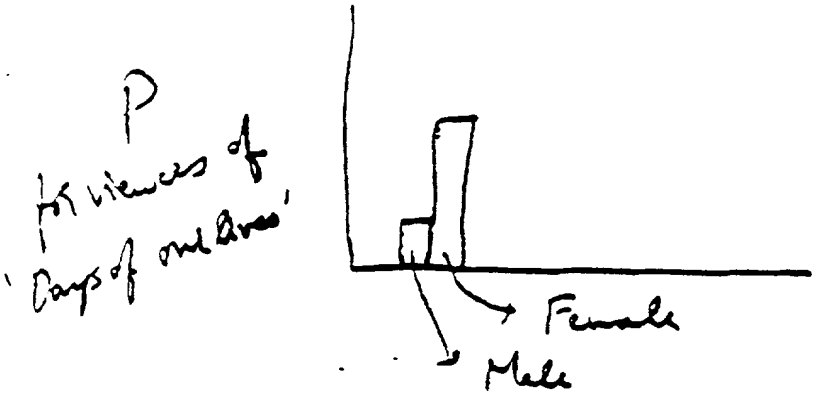

P
for viewers of
Corps of evaluators
Female
Male

Figure 21b

System Architecture

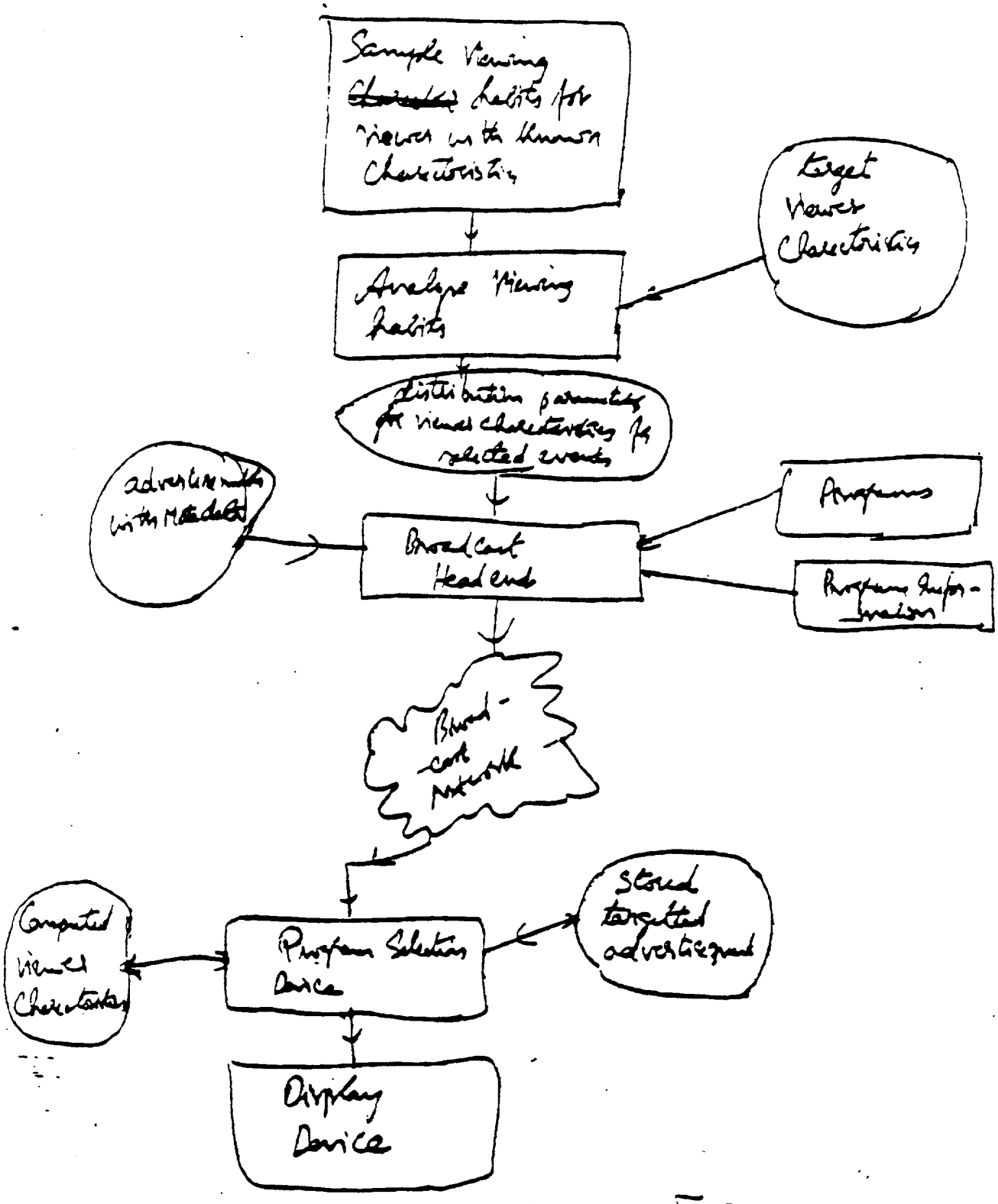


FIGURE 22

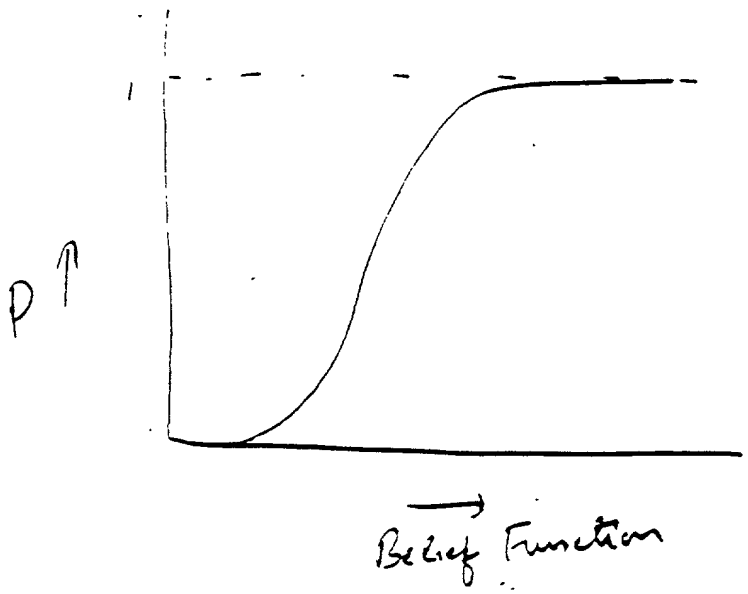


Figure 23a

Demographic Trait Record format

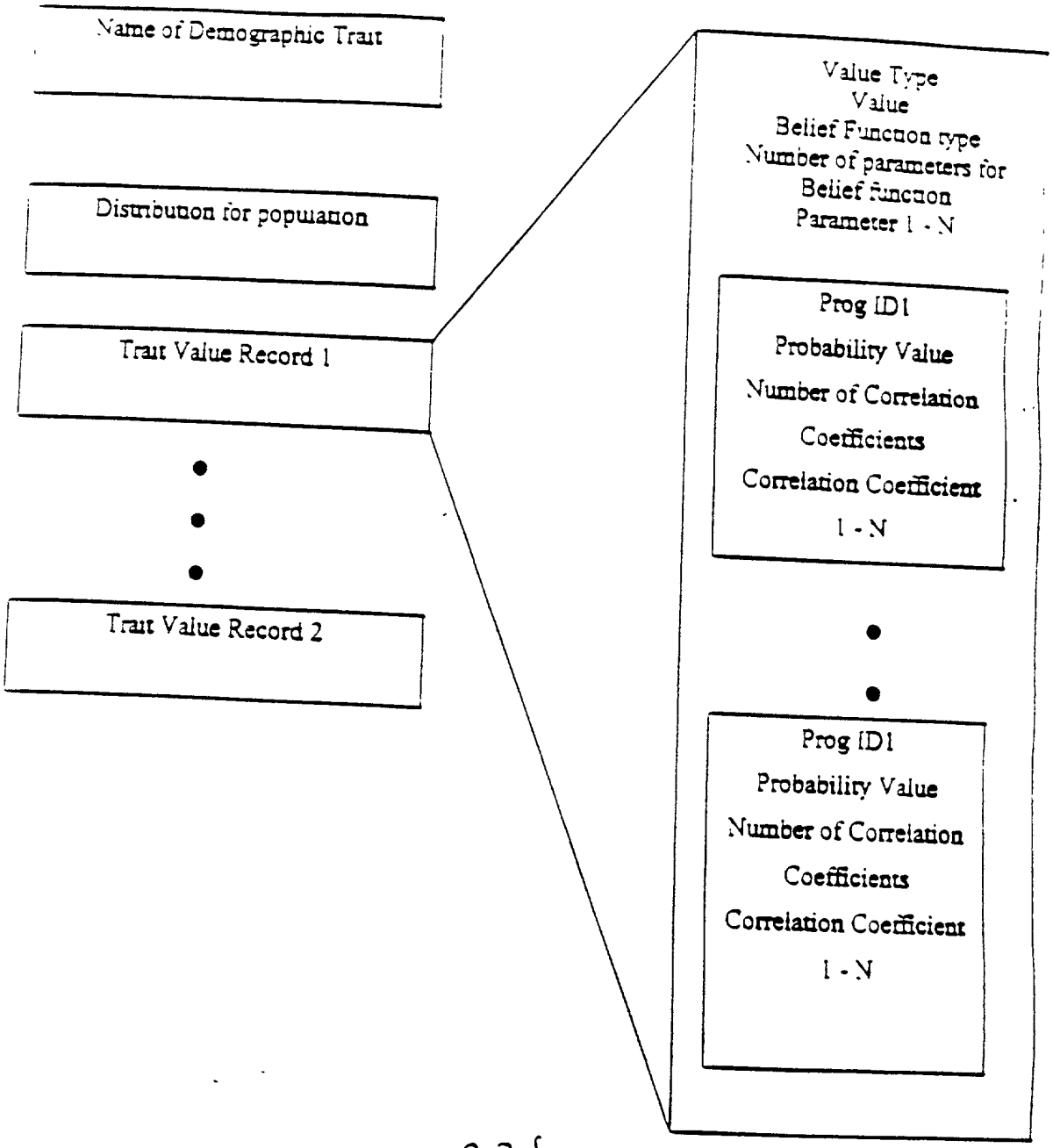


Figure 23b

Advertisement Targeting Record format

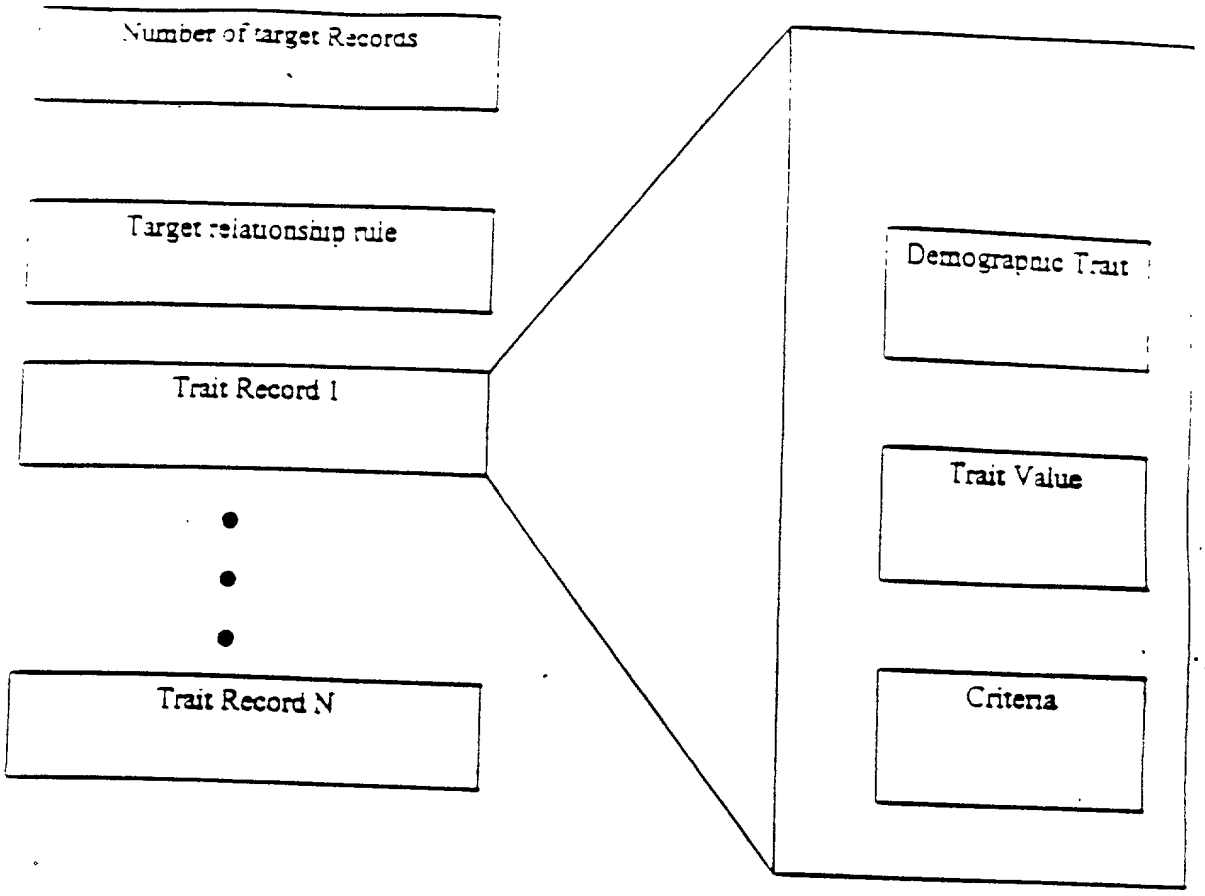


Figure 23C

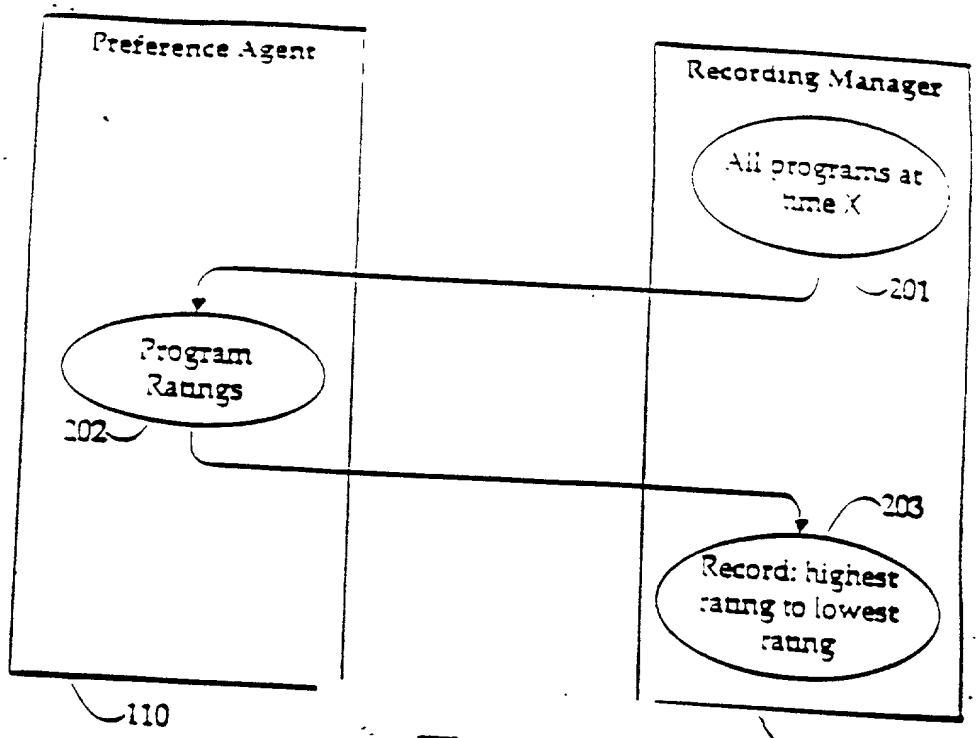


Figure 24

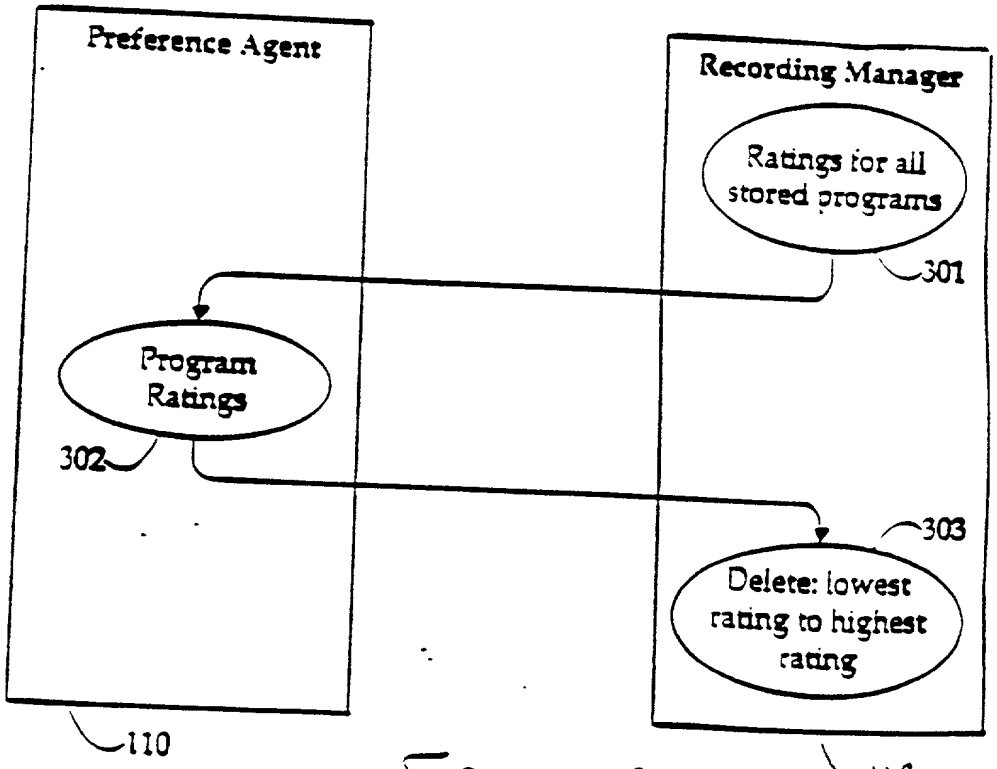


Figure 25

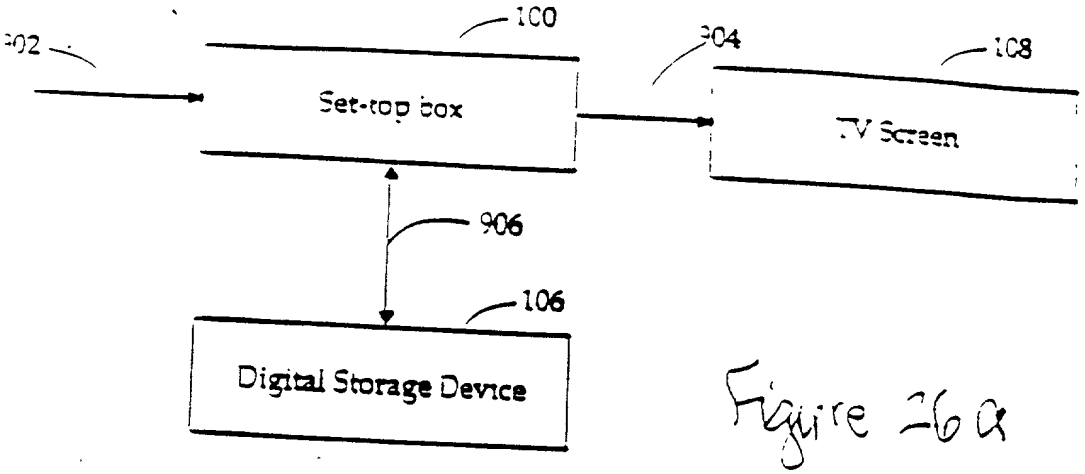


Figure 26a

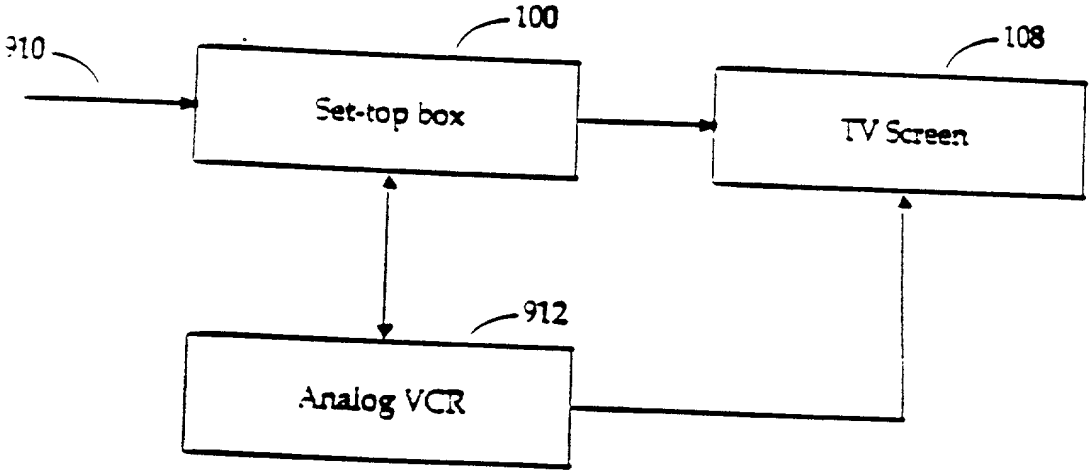


Figure 26b

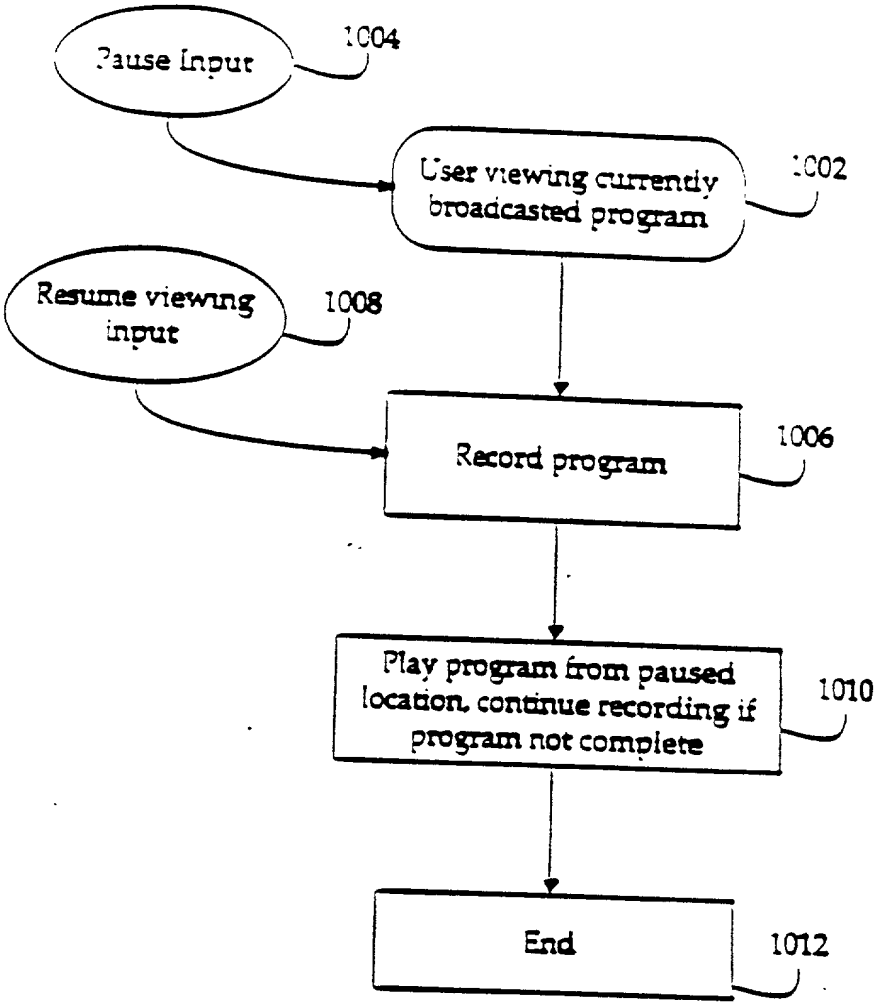

Pause Input
1004
User viewing currently broadcasted program
1002
Resume viewing input
1008
Record program
1006
Play program from paused location, continue recording if program not complete
1010
End
1012

Figure 27

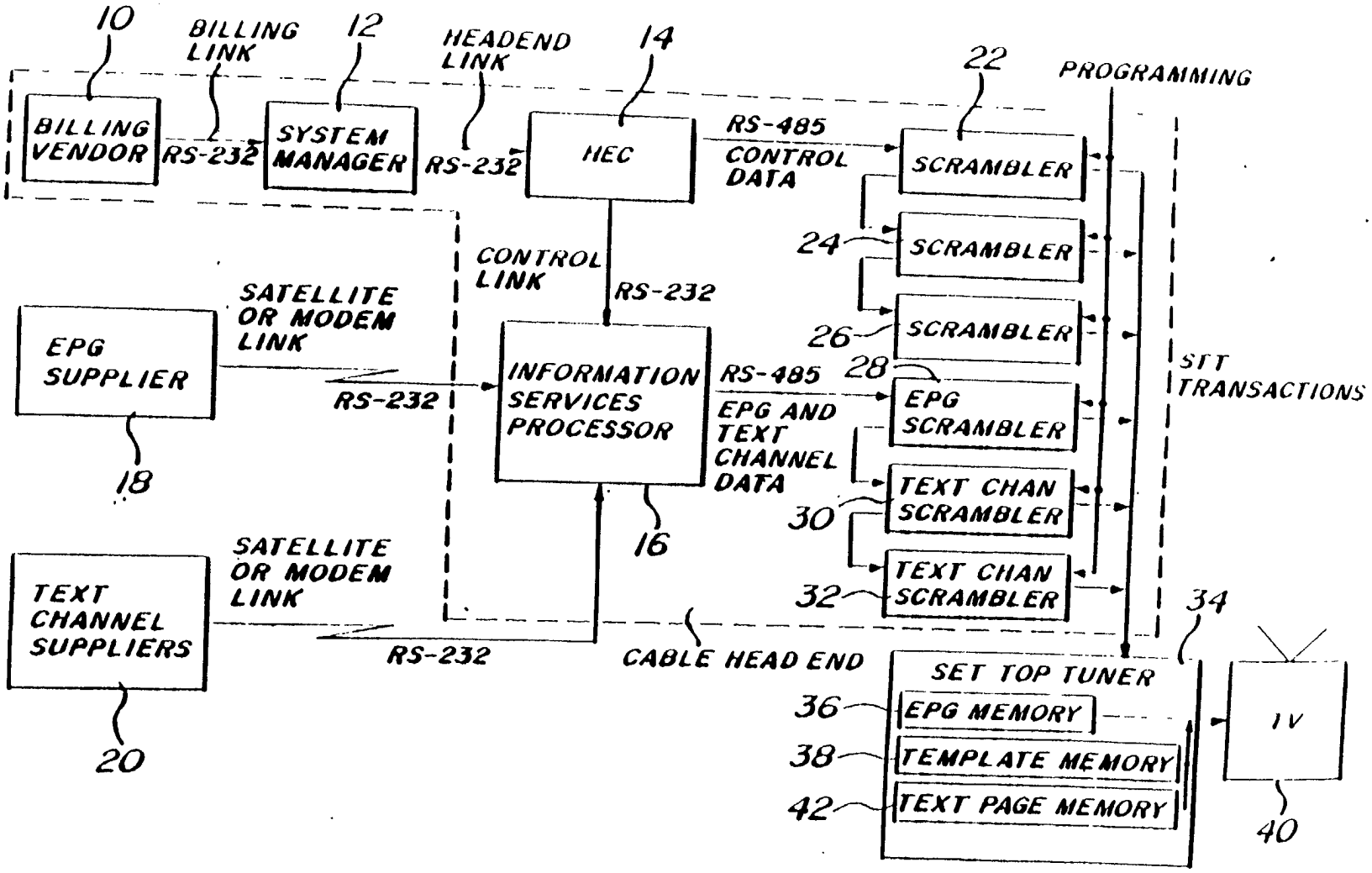


Figure 28

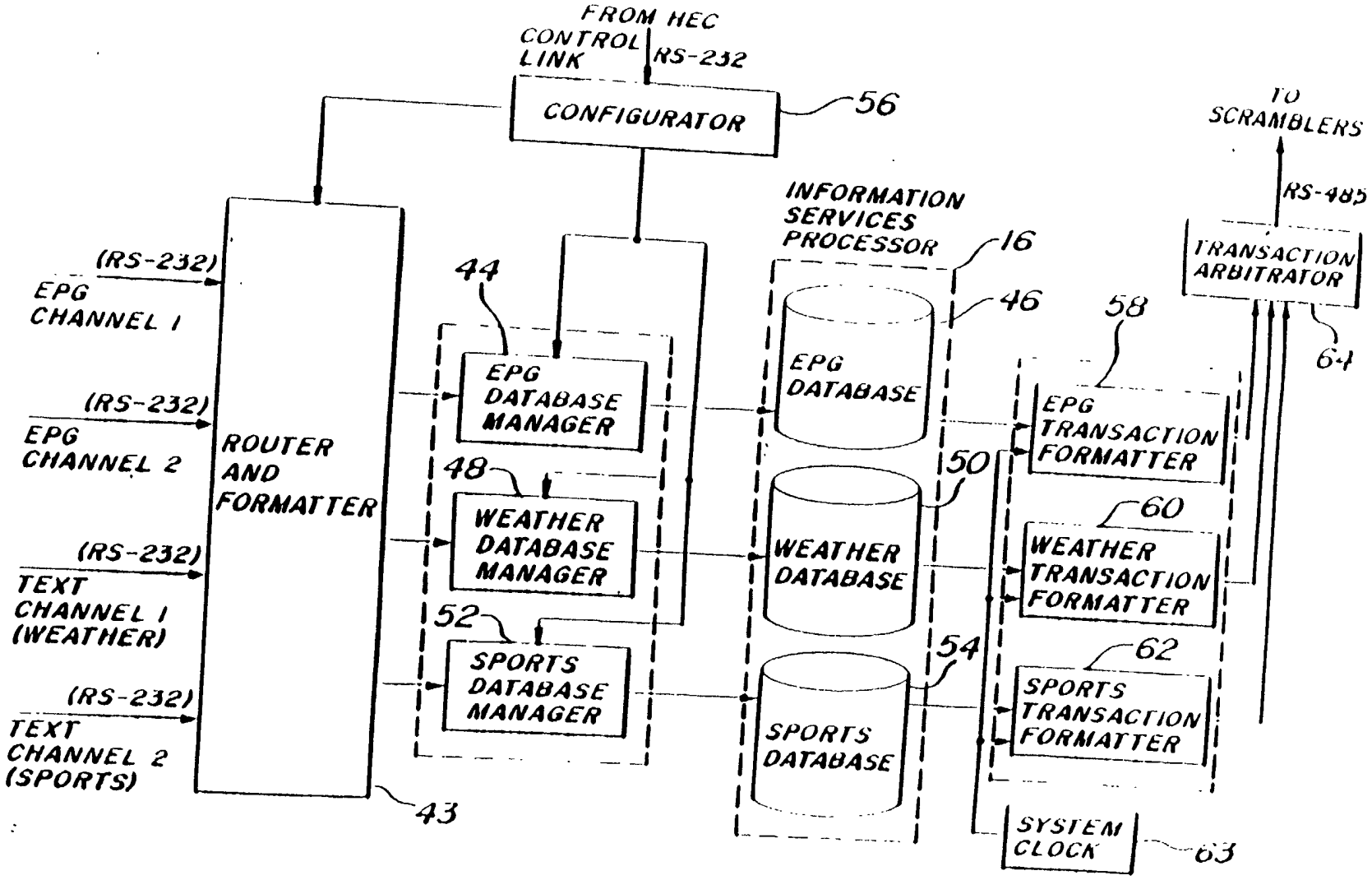


Figure 29

(INFORMATION FIELD)

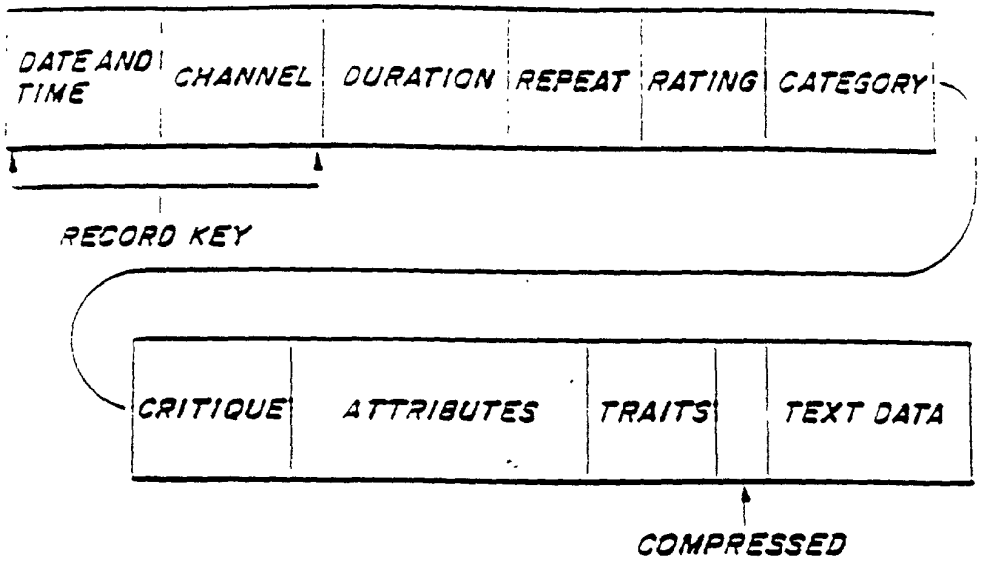


Figure 30

(TO SCRAMBLERS)

BEGINNING FLAG 1 BYTE	STATION ADDRESS 1 BYTE	CONTROL 1 BYTE	INFOR-MATION FIELD n BYTES	FRAME CHECK 2 BYTES	ENDING

Figure 31

EPG TRANSACTION FORMATTER 58

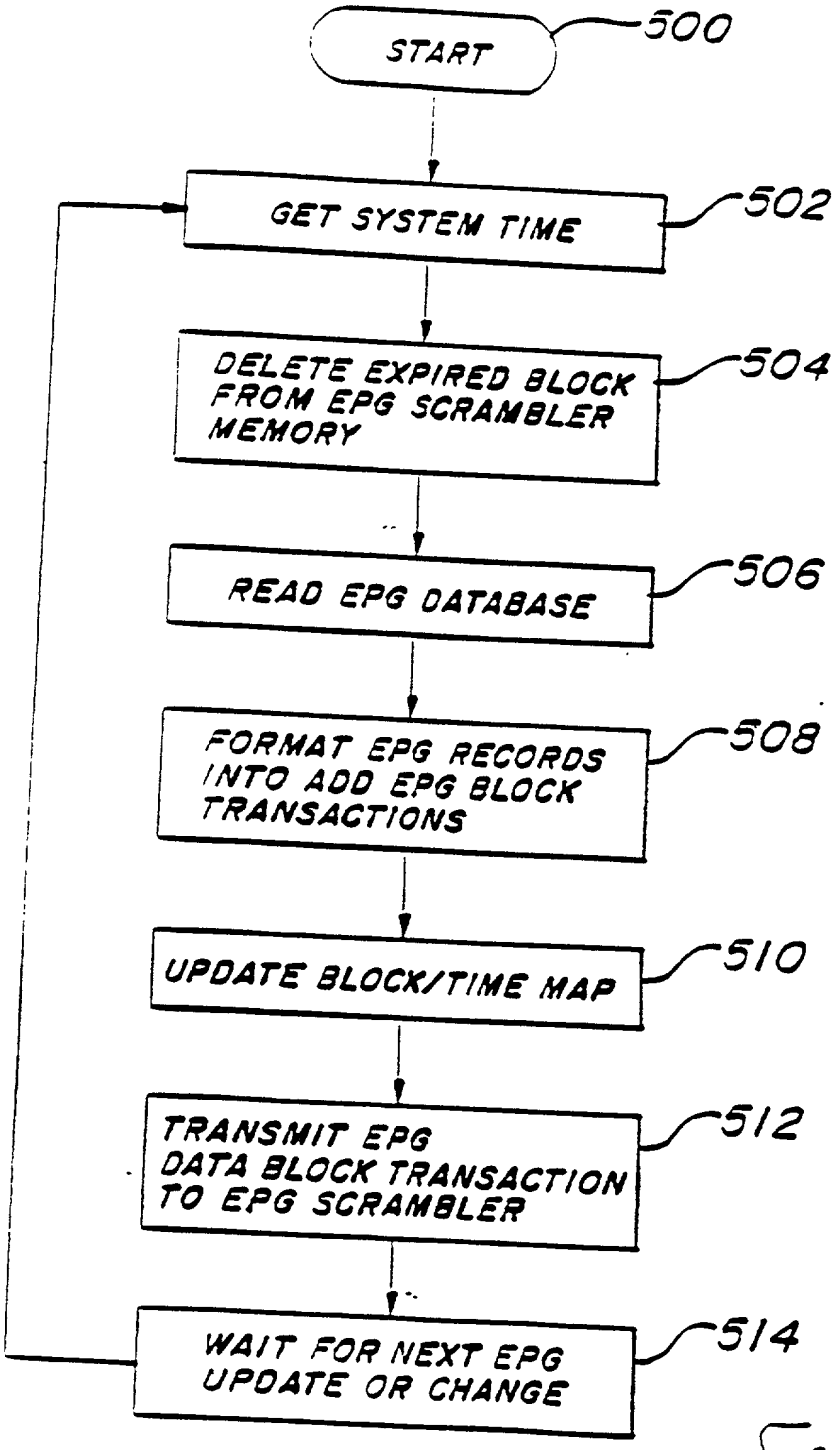


Figure 31

TEXT CHANNEL TRANSACTION FORMATTER 60, 62

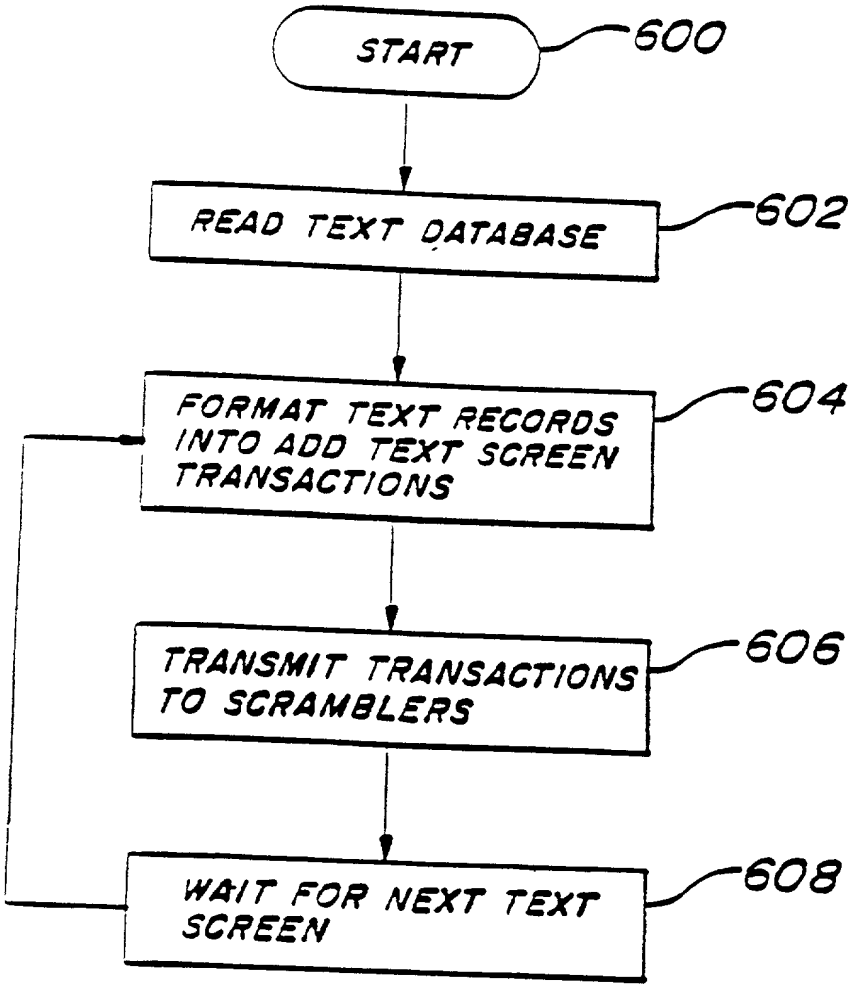


Figure 33

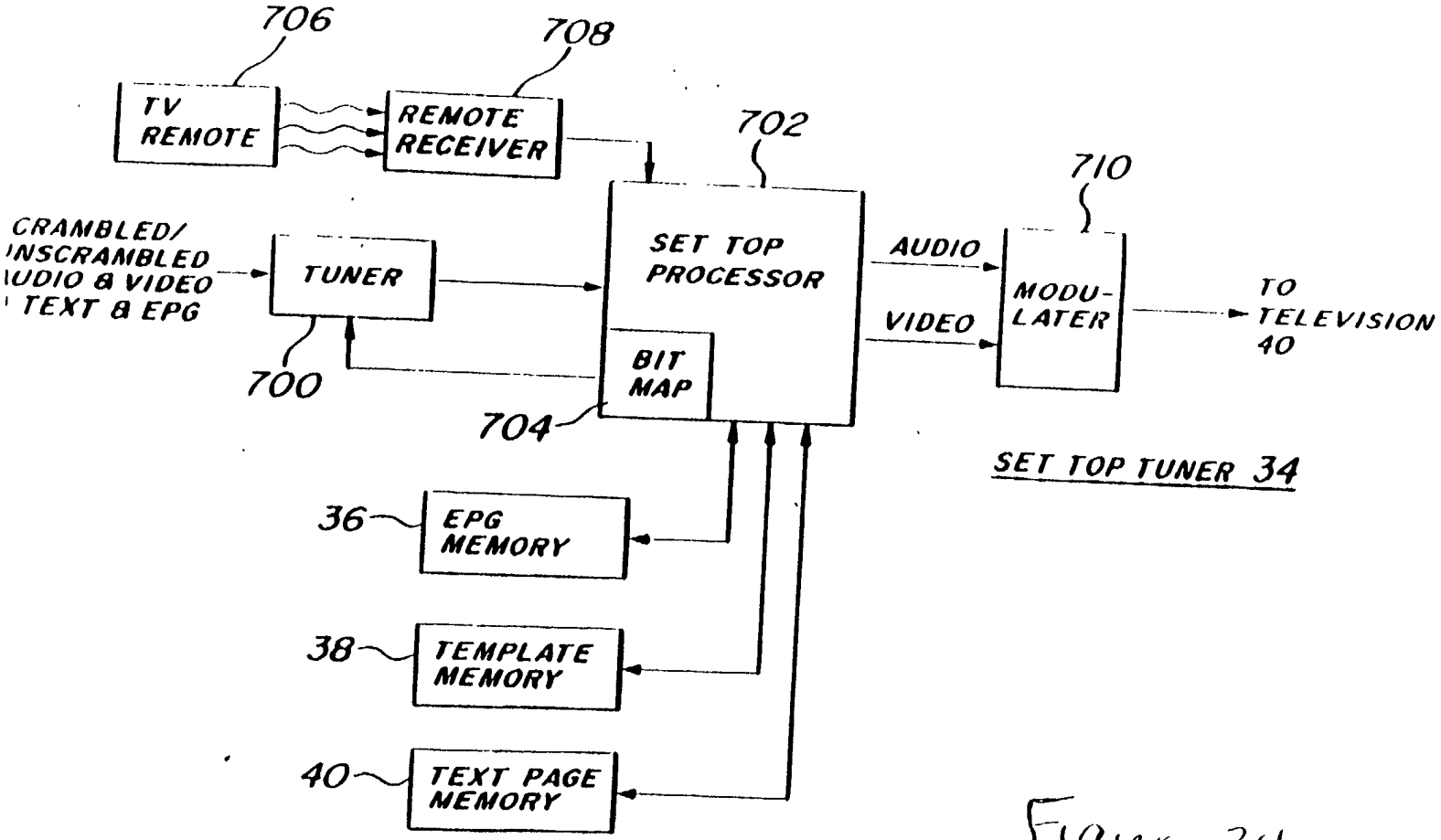


Figure 34

Process for automatically creating multiple profiles and automatically identifying current active profiles

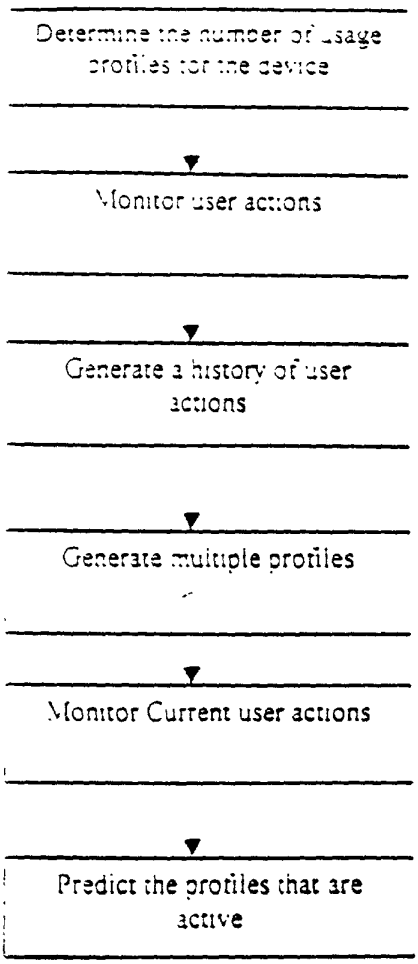


Figure 15

CIRCULAR PROGRAM GUIDE

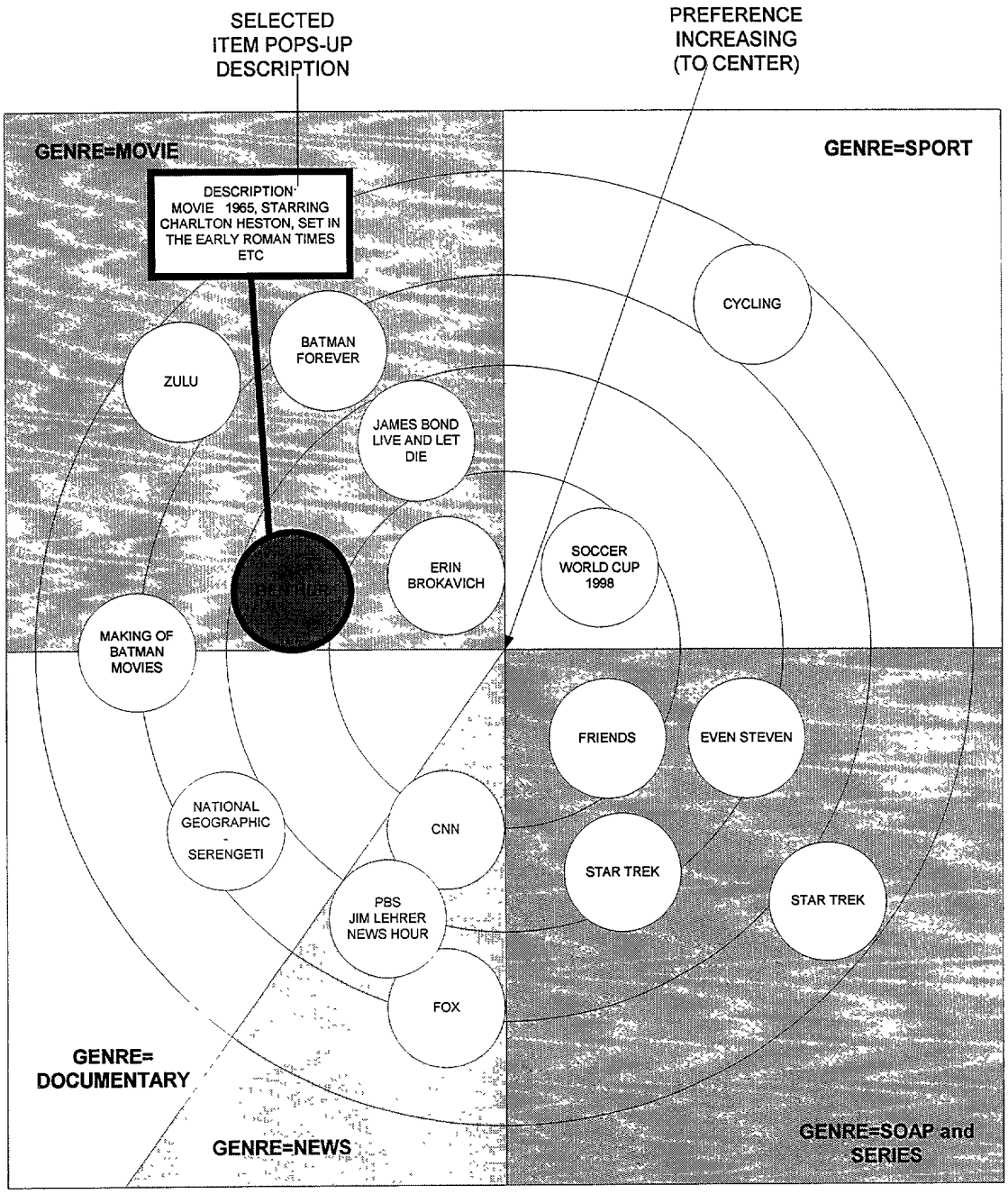


Figure 36